November 16-17
2020

THE INTERNATIONAL CONFERENCE OF EXPERTS FROM RUSSIA AND ASEAN MEMBER STATES

Improving the system interaction and exchange of experience in diagnosis, treatment and prevention of tuberculosis (TB)

Presentations

Proceedings of the International Conference of experts from Russia and ASEAN member states "Improving the system interaction and exchange of experience in diagnosis, treatment and prevention of tuberculosis (TB)"

Presentations

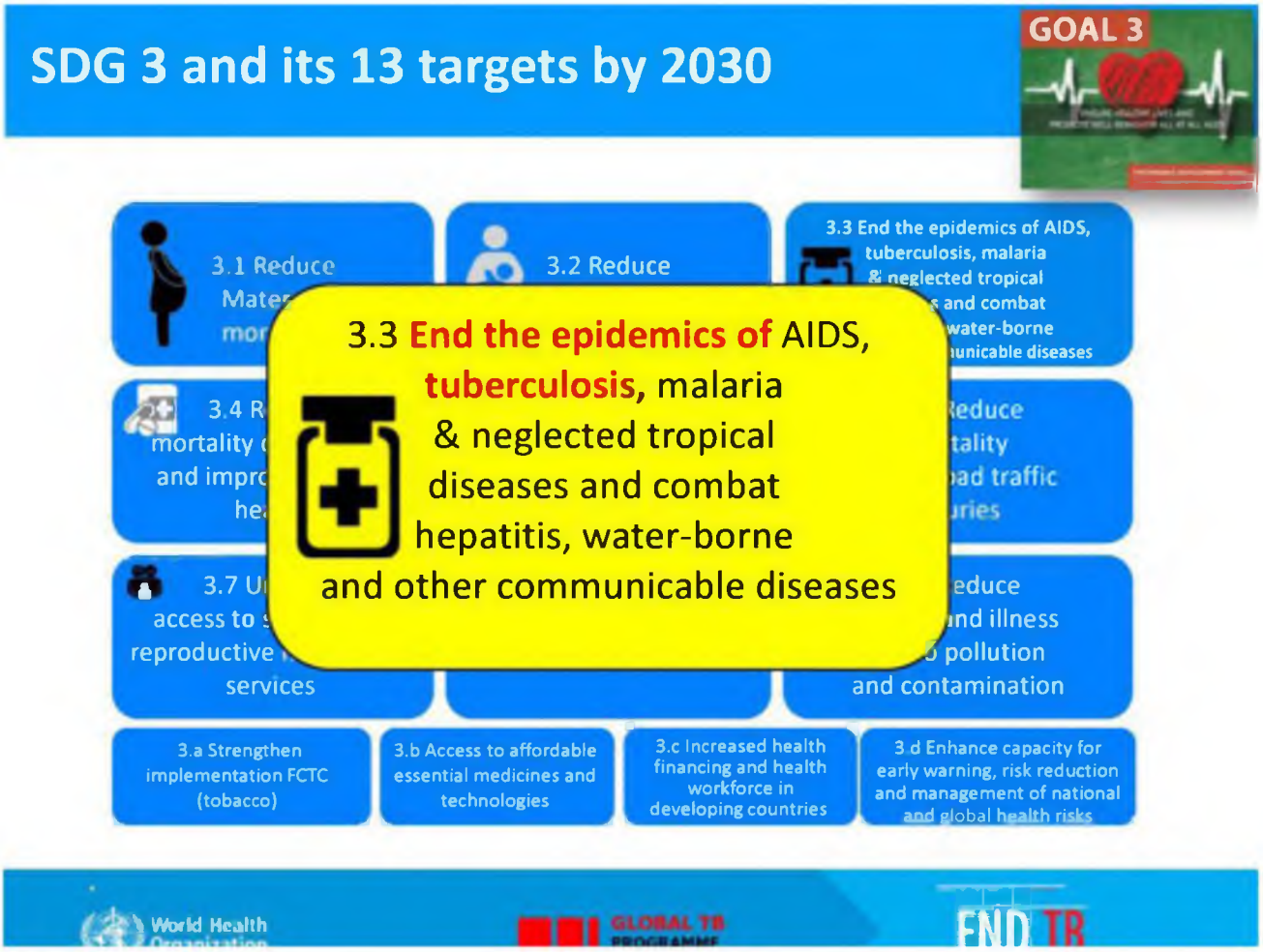
International Conference of Experts from Russia and ASEAN Member States
Improving the System Interaction and Exchange of Experience in Diagnosis, Treatment and Prevention of Tuberculosis (TB)

Progress in implementation of the END TB strategy

Prof. IRINA VASILYEVA
Chief TB expert of the MoH

National Medical Research Center of
Phthisiopulmonology and Infectious Diseases
Moscow, Russian Federation

November 16-17, 2020



The End TB Strategy: Vision, Targets and Pillars

Vision:
A world free of TB
Zero TB deaths, Zero TB disease, and Zero TB suffering

Goal:
End the Global TB epidemic

	MILESTONES		TARGETS	
	2020	2025	SDG* 2030	END TB 2035
Reduction in number of TB deaths compared with 2015 (%)	35%	75%	90%	95%
Reduction in TB incidence rate compared with 2015 (%)	20%	50%	80%	90%
TB-affected families facing catastrophic costs due to TB (%)	0%	0%	0%	0%

World Health Organization | GLOBAL TB PROGRAMME | END TB

The Russian Federation

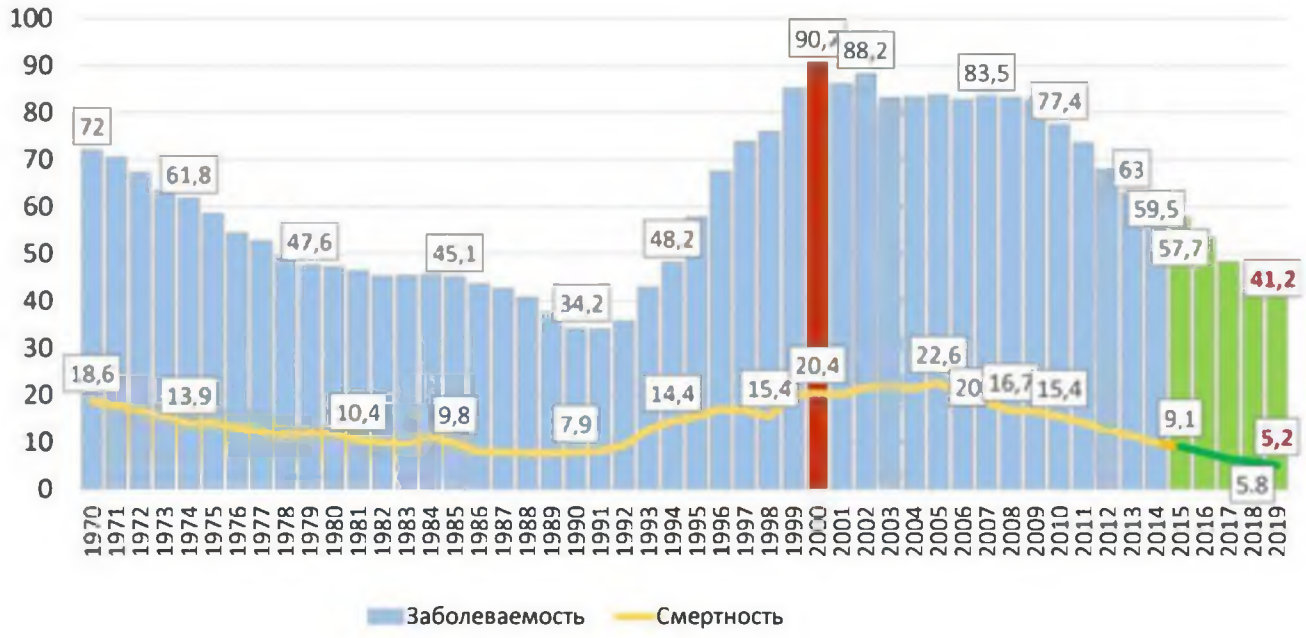
Total population in **2020** – 146,78 millions people

Global TB burden

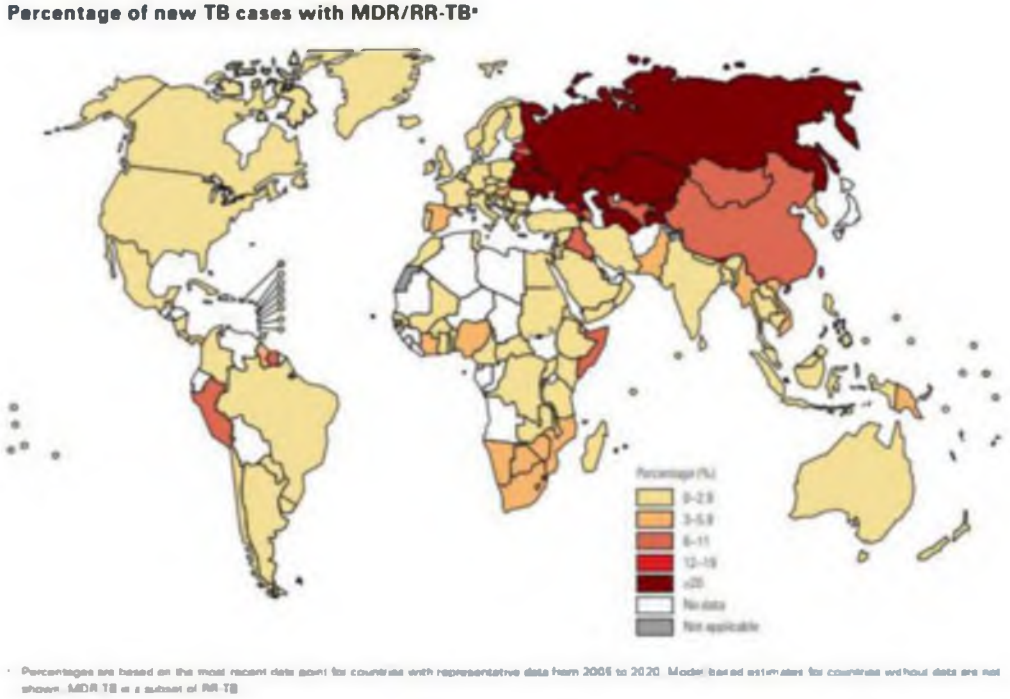
Tuberculosis is the top infectious killer in the world

Global TB Report 2015, 2020

TB incidence and mortality rate in the Russian Federation, 1970 – 2019

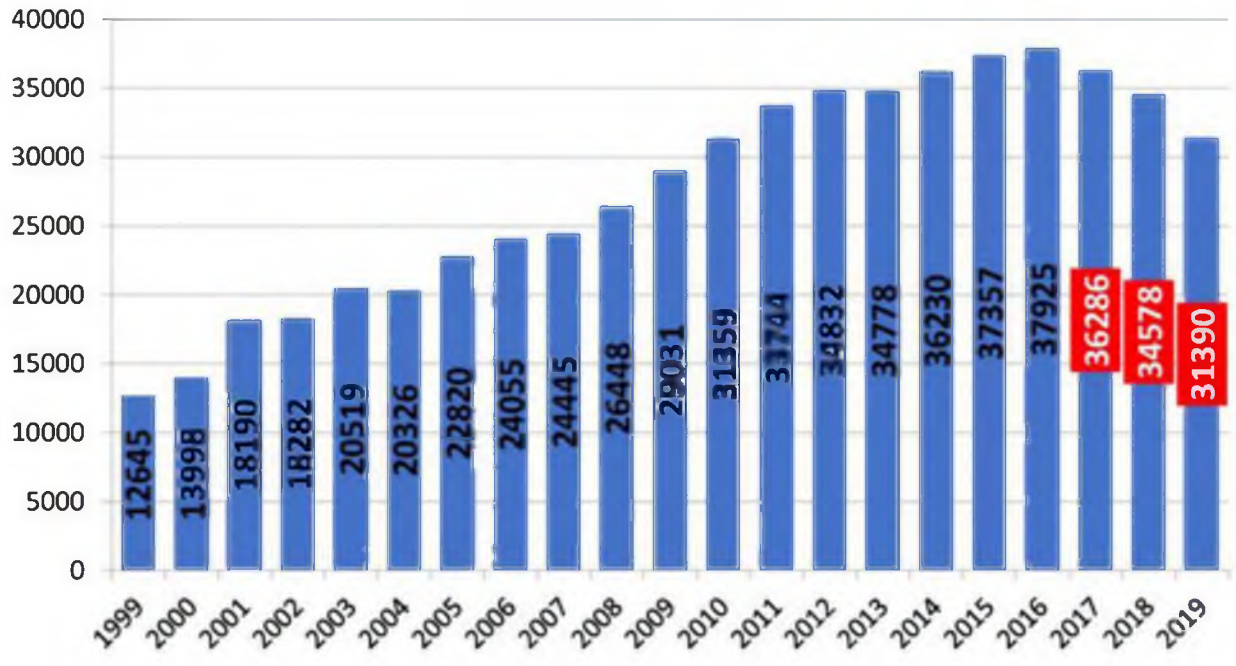


Percentage of New TB cases with MDR/RR-TB

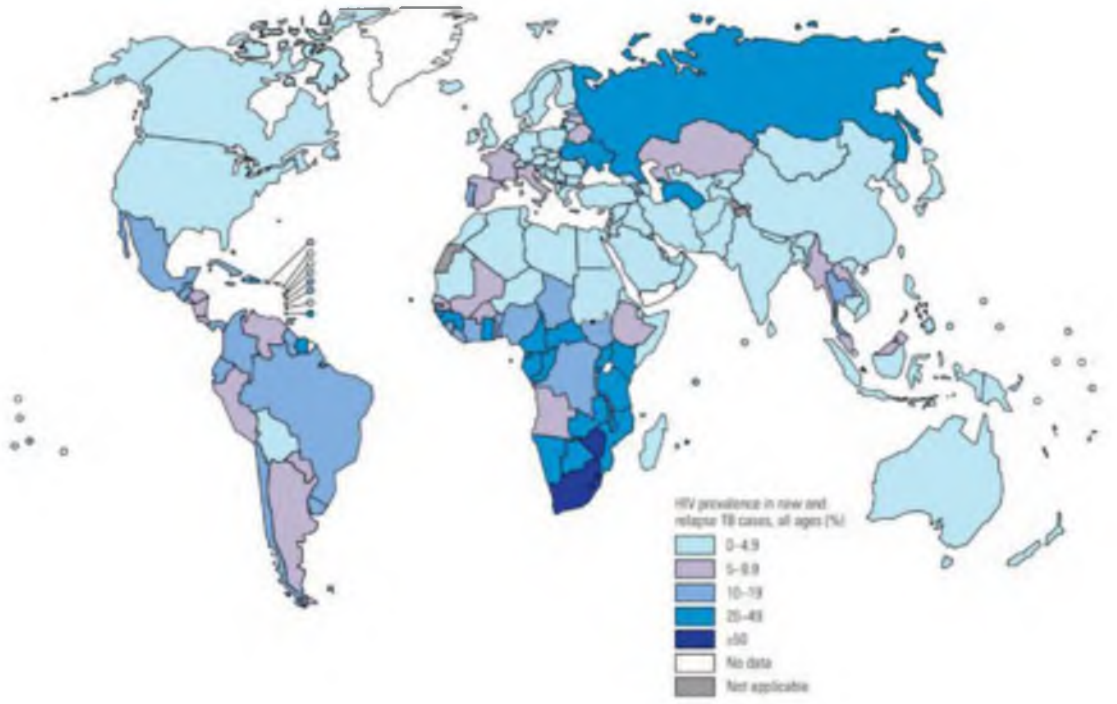


* Percentages are based on the most recent data seen for countries with representative data from 2006 to 2020. Model-based estimates for countries without data are not shown. MDR-TB is a subset of RR-TB.

Absolute number of MDR-TB patients in Russia

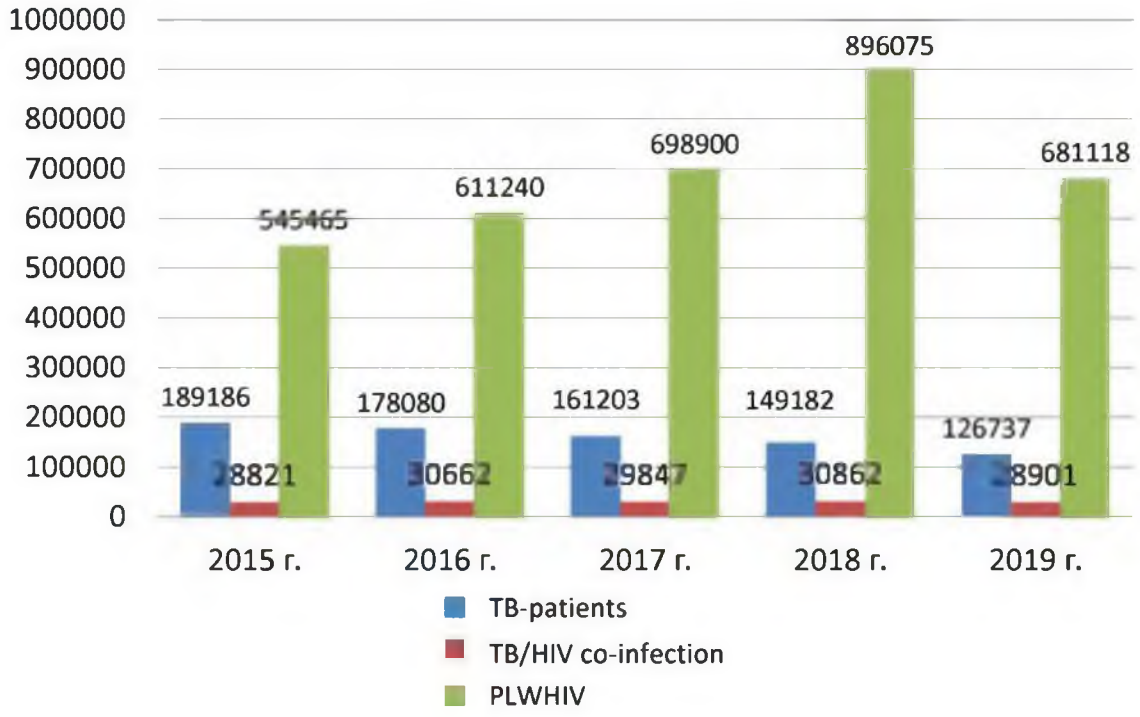


Estimated HIV prevalence in new and relapse TB cases, 2019



Global TB Report 2020

Absolute number of PLWHIV, TB and TB/HIV patients (2015 – 2019)



Current challenges & urgent actions needed to achieve high-level end-of-TB commitments and targets

Challenges:

- High levels of MDR-TB (**32%** of MDR-TB cases among new cases)
- Spreading HIV and increasing risks of TB/HIV co-infection
  (**19%** of TB/HIV among new TB cases and relapses)

Urgent actions:

- MDR-TB prevention, detection and treatment
- Prevention of TB/HIV co-infections

National TB Strategy in the Russian Federation

Political support

Patient-centered detection, prevention and treatment of tuberculosis

Intensified priority research in phthisiology

Political support

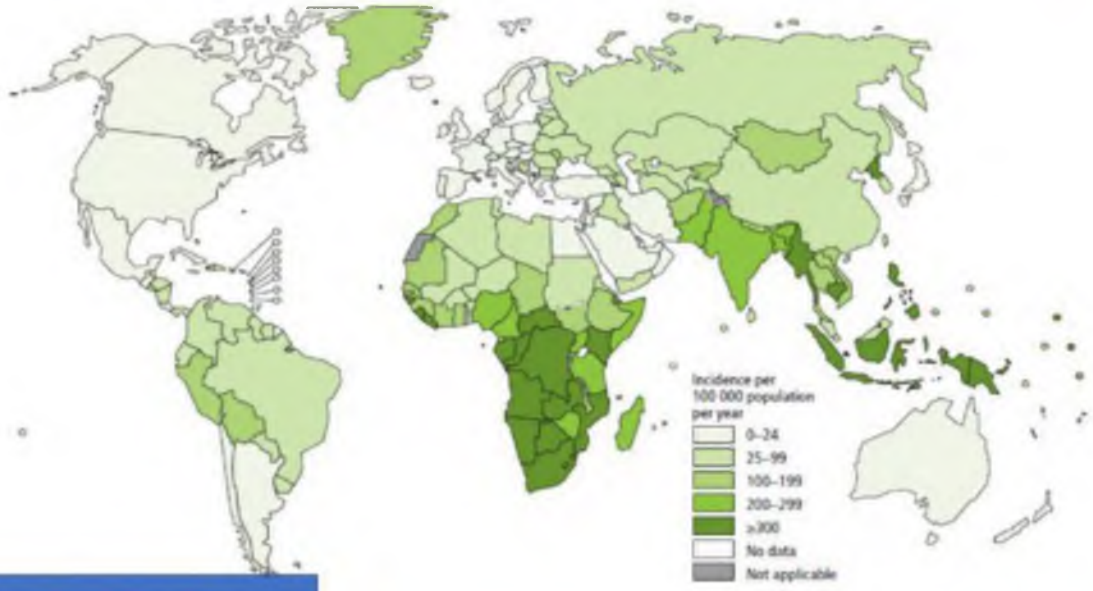
- TB Control is included in Federal Programme of Russian Federation "Development of Health Care"
- Implementation of regional action plans on decreasing of TB deaths
- Medical care is free of charge
- Availability of all range of medical service to the Russian citizens
- TB diagnostic on modern principles
- Proper drug management
- Social support and protection

Patient-centered detection, prevention and treatment of tuberculosis

Prevention of TB in risk groups	Early detection of tuberculosis	Early diagnostics of MDR TB
Effective treatment	Enhancement of treatment adherence	Collaborative programs on TB/HIV co-infection

Estimated TB incidence per 100,000 population

In Russia, 99% of the estimated number of cases are detected



Globally– 71%

Global TB Report 2019

Early TB detection in risk groups

Coverage with screening for TB in 2019:
72.3% of all population,
85.0% of children in the age from 0 to 14 years old is covered with immune tests

Revision of the regulatory framework:
-on management of active TB detection
- on management of diagnostics in healthcare facilities

Inter-agency programs on mass screening for TB in risk groups

Target:

Coverage with screening for TB of at least 90% of **those from risk groups**

Recombinant tuberculin

Diaskintest® - the new generation of TB skin tests

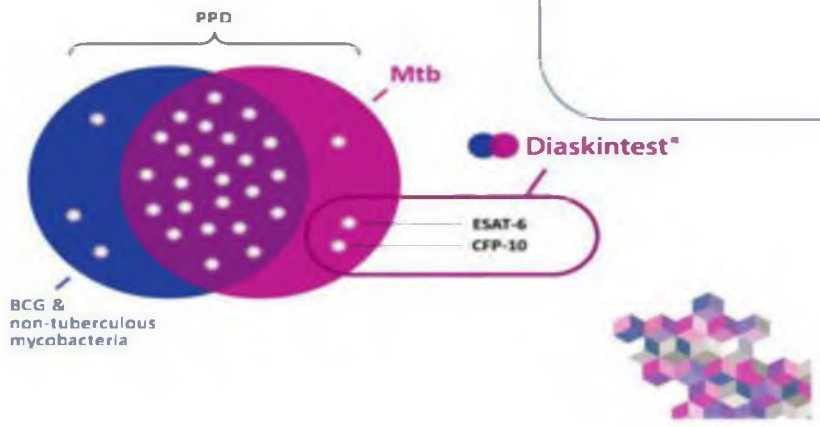
Positive outcomes of incorporating the test in public health care practice:

- **5 times greater** diagnostic capacity in children

Generium

Diaskintest® is Mtb-SPECIFIC

DST is based on purified ESAT-6 and CFP-10



Early diagnostics of MDR TB

DST in **all TB patients** with a positive result of sputum test

Wide introduction of most recent technologies for rapid drug susceptibility tests

97.1% of new TB cases was covered with DST **prior to** treatment start

92% of new TB cases was covered by **molecular genetic** with DST prior to treatment start

Target:
100% is to be covered by **molecular genetic** drug susceptibility tests prior to treatment start

Russian molecular genetic technologies for TB diagnosis and DST

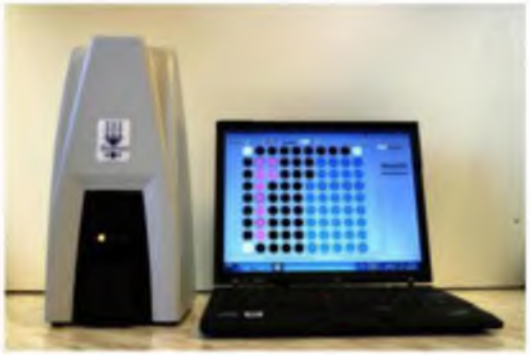
Biochip Hydrogel

Multicomponent allele-specific PCR
Real-time PCR technology

ИНСТИТУТ МОЛЕКУЛЯРНОЙ БИОЛОГИИ ИМЕНИ В.А. ЭНГЕЛЬГАРДТА

National Medical Research Center Phthisiopulmonology and Infectious Diseases

СИНТОЛ



Issues requiring research

Prevention

- Primary prevention
- Diagnostics and treatment of latent tuberculous infection

Diagnostics

- Pulmonary tuberculosis with the lack of sputum and markers of M. tuberculosis in the specimens
- Extrapulmonary tuberculosis
- Tuberculosis in the HIV infected

Short-course effective treatment

- MDR/XDR TB
- TB/HIV co-infection
- MDR/XDR TB in children

Areas of intensified research

Fundamental research → Translational studies → Preclinical/Clinical studies → Operational research

Tangibly intensified effort is needed ***along the full spectrum of research*** :

- **Basic science (immunology, pathogenesis)** to prompt discovery of new tools
- **R&D pipeline** for testing and validating new tools
- **Innovative strategic approaches** adapted to specific country needs
- **Factors influencing health-related practices** of patients and health care workers
- **Social determinants of health** and financial protection

GamTBvac: a novel recombinant subunit tuberculosis vaccine, *Russian Federation*

Product:

GamTBvac, recombinant subunit vaccine against tuberculosis, 12.5 mg/dose

Stage of development:

Clinical trials phase II

Developer and manufacturer:
Gamaleya State Research Center for Epidemiology and Microbiology

National Medical Research Centre of Phthisiopulmonology and Infectious diseases

Focused areas of research

- Study of TB **immunopathogenesis, dormancy** , search of biomarkers **of TB activity**
- **Sequencing** (NGS) , search for new determinants for DR, molecular epidemiology
- Search new targets of regulation and testing of **candidate molecules for new TB drugs**
- Development of the alternative methods of TB treatment with the use of **mycobacteriophages**
- Development **of prevention, diagnostics , treatment** strategies
- Evidence - based methods of TB care management

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

Всемирная организация здравоохранения

END TB

FIRST WHO GLOBAL MINISTERIAL CONFERENCE

ENDING TB IN THE SUSTAINABLE DEVELOPMENT ERA: A MULTISECTORAL RESPONSE

« … **Only together, uniting efforts, we will be able to counter the threat, which is, of course, global in nature**.»

«… an **important factor of success is the intensification of scientific research** in the field of tuberculosis, **the development of effective diagnostic tools, vaccines, drugs, including those aimed at treating resistant to existing drugs forms of tuberculosis**..»

President of the Russian Federation V.Putin

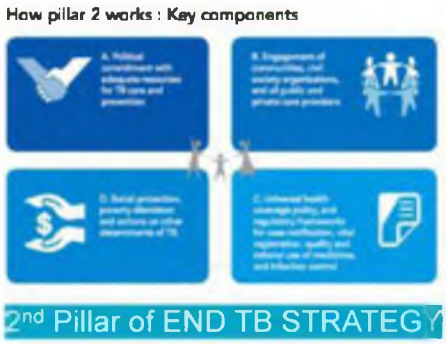
The Conference was attended by over 1000 participants from 120 Member States

- Indonesia: ***Dr. Imran Pambudi "Multisectoral approach and high level commitment to end TB in Indonesia"***

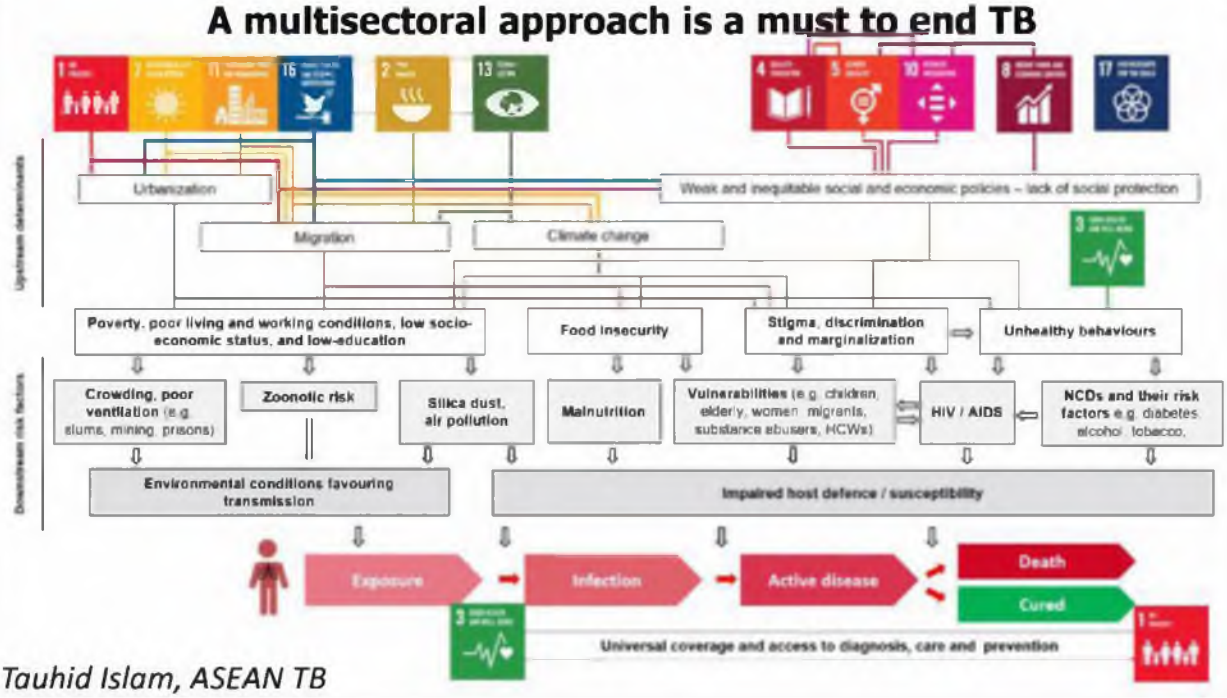
ACCOUNTABILITY FOR WHAT?

IMPROVEMENT

- Political → Highest political visibility
- Financial → Sustainable adequate resources
- Performance → Multi-sectoral actions



A multisectoral approach is a must to end TB



Tauhid Islam, ASEAN TB

KEMENTERIAN KESEHATAN REPUBLIK INDONESIA

GERMAS

POLICIES & LEGISLATIONS

- Draft of the Presidential Decree on Tuberculosis (End of 2020)
- TB Prioritization regulations in other ministries
- Presidential High Level Meeting on TB Acceleration (July 2020)
  - Ministry of Finance, Coordinating Ministry of Human Development and Cultural Affairs, Ministry of Social Affairs, Ministry of Health, Ministry of Public Works and Housing

COMMUNITY MONITORING & REPORTING

- Partnered with TB CSOs and affected communities to review the implementation of TB
- Patient-centered approach

> 2X INCREASE IN TB BUDGET FOR 2021


TOSS TBC
Temukan TBC Obati
THANK YOU
SIAP
1500567

Progress Update on TB Control

International Online Conference of Experts
from Russia and ASEAN Member States
"Improving the system of interaction and sharing experience in diagnostics, treatment and prevention of tuberculosis",
16-17 November 2020

Dr. Huot Chan Yuda
Director
National Center for TB and Leprosy Control, MoH, Cambodia

VCAM-NTP

Outlines of Presentation

1. Burden of Tuberculosis in Cambodia
2. Achievements
3. Challenges
4. Impact of COVID-19 on TB
5. NTP Future Direction
6. Major Funding Sources
7. Summary

VCAM-NTP 2

1. Burden of TB in Cambodia

- Cambodia is one of the 22 HBC with TB in the world till 2015. From 2016, Cambodia remains one of the 30 HBC with TB in the world.
- Incidence Rate* of all forms of TB in 2019: **287**/ 100,000 pop.

*WHO Global TB Report 2020

- Death rate*: **17**/100,000 pop. in 2019 * WHO Global TB Report 2020

***NTP has alos achieved the MDG target for this indicator** (4 years before schedule)*

1. Burden of TB in Cambodia (Cont')

- Prevalence Rate of all forms* of TB in 2014: **668** / 100,000 pop.

*WHO Global TB Report 2015.

TB Prevalence declined from 1670 in 1990 to 817 in 2011 (51% reduction);

NTP has achieved the MDG target for this indicator (4 years before schedule)

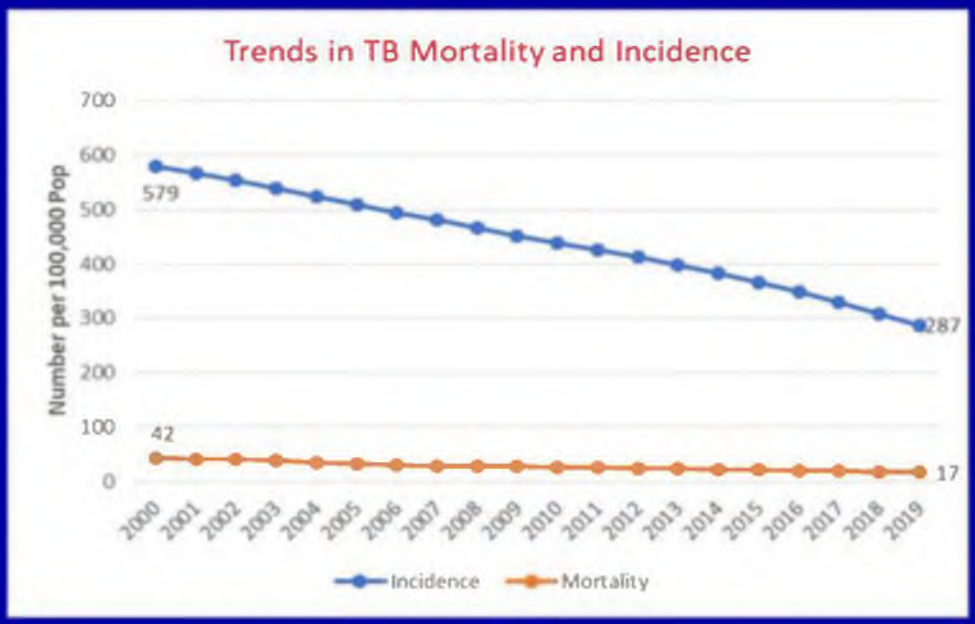
- Results of national prevalence surveys
  - Prevalence Rate of Sm+* for > 15 y
    - **in 2011: 271/ 100,000 pop.**
    - **in 2002: 437/ 100,000 pop.**

Reduction of 38% in 9 years (2002-2011)---an average of 4.2 % per year.

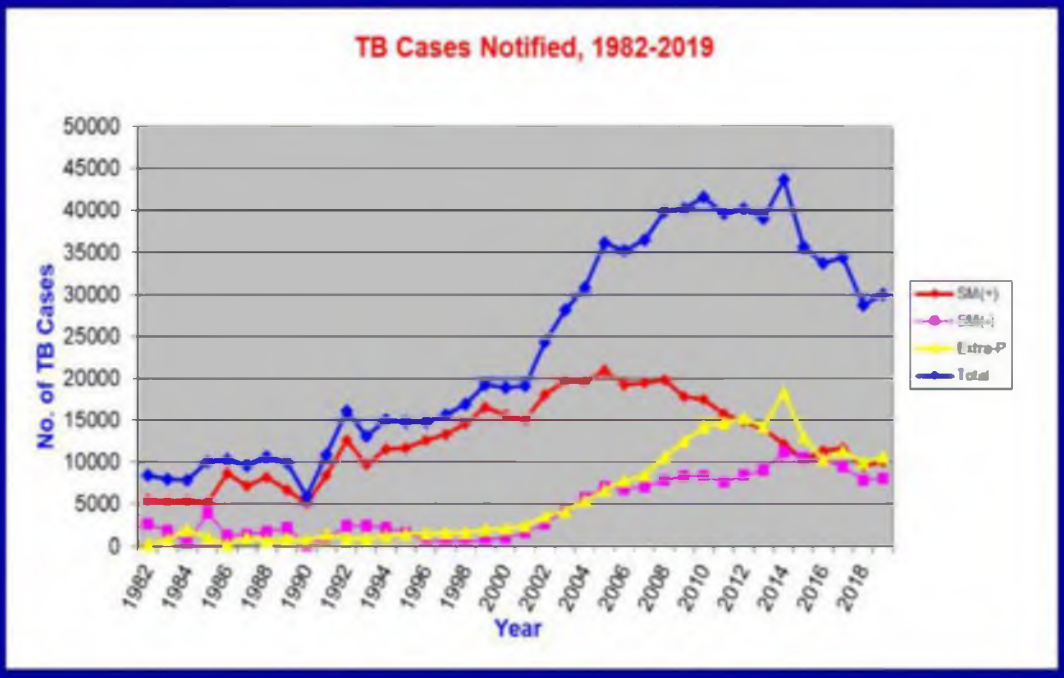
1. Burden of TB in Cambodia (cont')

- HIV Sero-prevalence among TB Patients : **2.5%** in 1995,
  12% in 2003, **10%** in 2005, **7.8%** in 2007 and **6.3%** in 2009, and **2 – 2.5 % in 2019** (rough estimate)
- MDR-TB burden in 2019, Cambodia (WHO Global TB Report 2020)
  - Percentage of TB cases with MDR/RR-TB among **new smear positive= 1.8%**
  - Percentage of TB cases with MDR/RR-TB **among re-treatment cases= 8.2%**

2. Main Achievements

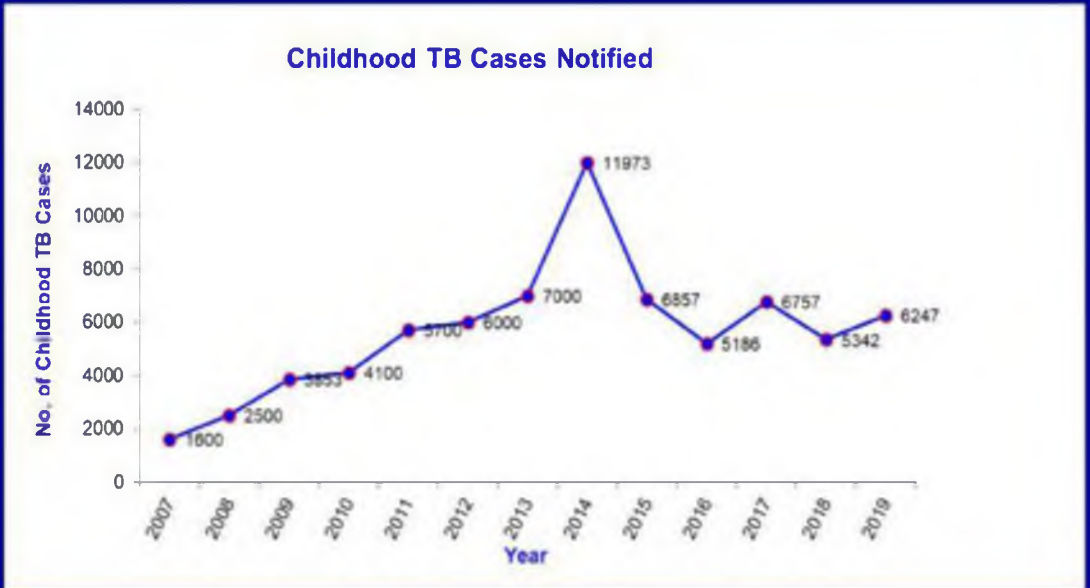


2.1 TB Case Notification Nationwide 1982-2019



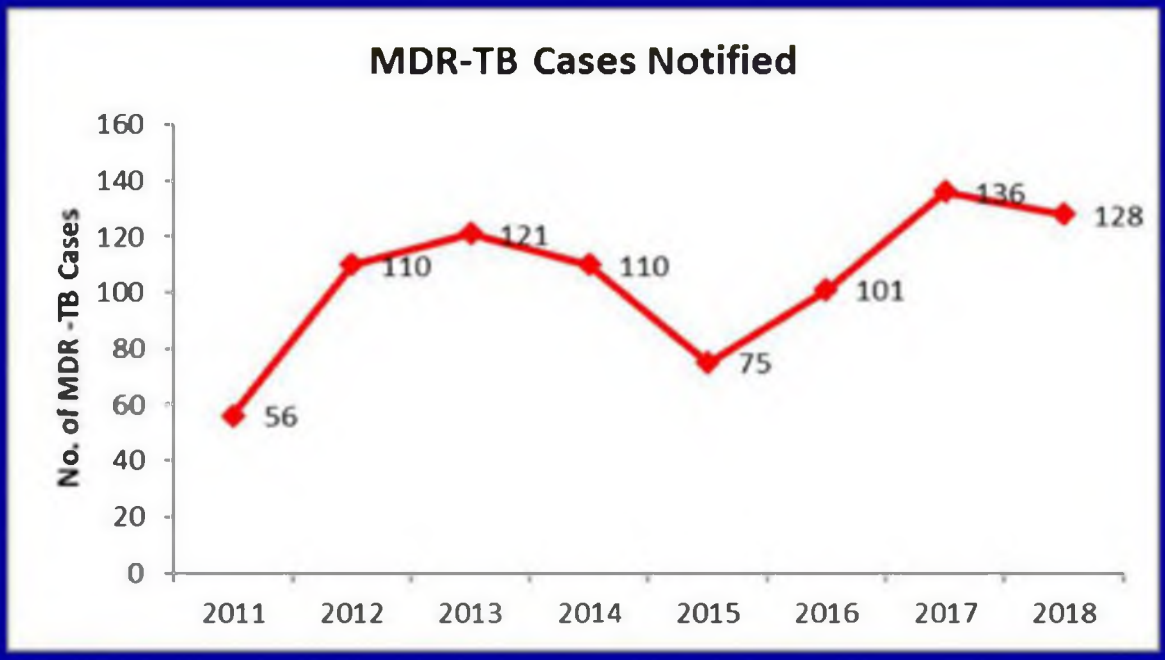
Total cases: 21,732 (Jan-Sep 2020)

2.2 Childhood TB cases notified



Jan-Jun 2020 = 3,075 cases

2.3 MDR/RR-TB enrolled on Treatment



MDR-TB cases notified in 2019 = 135 and 2020 (Jan-Jun) = 63

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2.4 Treatment Outcomes

- Treatment Success rate of DS-TB: 94 % last year,
- *MDR-TB treatment success rate in 2017 cohort: 72%*

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2.5 Other Achievements

- TB/HIV Activities (since 2003): by the end of 2008- 74 ODs, and by the end of 2011- all ODs. Now ,all ODs (103 ODs).
  - *HIV testing among TB patients:* ***94%*** *(2019), 91% (Jan-Jun 2020).*
  - *HIV(+) TB patients received ART:* ***98%*** *(2019), 85% (Jan-Jun 2020).*
  - *IPT among PLHIV* has increased from 2,954 in 2018 to 8,381 in 2019.
- *IPT among Children < 5 Yrs:* ***3,030*** *in 2019, and 1,981 (Jan-Jun 2020)*
- **C-DOTS/Community TB screening** covered 644 HCs in 46 Ods by 2019. In 2020, 76 Ods (GF) & 10 Ods (USAID/COMMIT projet)
- **PPM-DOTS** (since 2005): in 8 provinces and 27ODs by 2014. No more this activity since 2015.

2.6 Other Achievements (cont')

- TB in prison (since 2005): 26 prisons in 2015 and 17 prisons in 2016 & 2017.
  - 2019: 19 prisons (**107** TB cases notified)
  - 2020 (Jan-Jun) : 48 cases notified (16 prisons)

2.7 Community DOTS/Community TB care

- 46 Operational Health Districts, 664 HCs by 2019 and 76 Ods in 2020 supported by GF
  - TB cases notified by Community DOTS in 2019: 9,665 (% contribution by C-DOTS: 32% (9,665/30,017)
  - Jan-Jun 2020: 5,842 cases

2.8 Active Case Finding

- **Active Case Finding by NTP/CENAT (2019)**
  - **7** operational districts

    X-ray taken: 8,589, Xpert testing: 923.

    Total 283 TB cases were detected including **136** bac (+) TB cases.

  - **3** prisons, X-ray taken: 5,264, Xpert testing: 293.

    Total **57** TB cases were detected including **17** bac (+) TB cases and 2 drug-resistant TB case.

2.9 Active Case Finding (cont')

- **Active Case Finding by CATA (2020)**
  - **12** operational districts (OD)

    Screen 49,123 elderly people by symptom & CXR) X-per testing 6,305, total number of TB cases **1,224 detected 2,197 including 641 Xpert positive.**

2.10 Research

- Third national drug resistance survey just completed (preliminary results RR/MDR: around 1% in new cases, and around 10% among retreatment cases).
- NTP and Institute Pasteur of Cambodia under TB-Speed project had started a research project to strengthen pediatric tuberculosis services for enhanced early case detection, which was supported by the UNITAID and INITIATIVE 5%. This research will be finished in 2021
- Study on TB preventive therapy using 3HP involving multi-countries project in collaboration with partner (CHAI).
- NTP is discussing with WHO, National University of Singapore and other partners to explore/select the study topics for the period 2021-2023.

3. Challenges

- Programmatic:
  - *high incidence, 1/3 of cases is still missing,*
  - *MDR, Childhood TB, High risk group (coverage, diagnostic tools,..)*
- Resources: Big financial gap

3. Challenges (cont')

- ***Resources to maintain momentum activities and expanding services*** (routine TB services, C-DOTS , TB-HIV,MDR-TB, Childhood TB, Xpert MTB/RIF, Laboratory capacity, TB in Prisons, etc)
- Anti-TB drugs and Diagnostic supplies
- Annual budget needed 30-35 Million/year (2021-2030)
- Currently ,only 2 major donors: GFATM and USAID,
- Budget allocation from GF for 2015-2017 : **15.66** Million (around 5 .20 million per year)
- Budget allocation from GF for 2018-2020 : 13.7Million (around 4.6 million per year) ; and additionally plus 2.7 Million from Fund Portfolio Optimization for late 2019 and full 2020.

  Budget allocation from GF for 2021-2023 :
  - **-Allocation : USD 13.9 Million**
  - **-Matching Fund : USD 6 Million**
  - **-PAAR : USD 7 Million**
- Financial gap still remain : may be bigger than 40% ?

4. Impact of COVID-19 on TB

	2019 Jan June:	2020 Jan June	% Difference
DS-TB	15,043	14,035	7.2
DR-TB	68	63	7.4

- **COVID impact on 2020 TB case finding diagnosis:**
  - Most of activities (ACF, community TB screening, ...) have been postpone/cancelled due to restriction : overall 6 months period dropped 7.2%-7.4% comparing the same period in pre-Covid-19.

- **Delivery of medicines treatment:**
  - Health Facilities provide longer period of medicines (2-3 months) to patients
  - However, no TB drug interruption at the central and sites

5. NTP Future Directions

- **Long terms goals: 2016-2030**
  - *Toward contributing to reaching SDG and End TB-Strategy*
  - Reduce TB incidence 80% by 2030
  - Reduce TB mortality 90 % by 2030
  - Resource mobilization

6. Major Funding Sources for NTP

- Government
- GF
- USAID (including Challenge TB)
- US-CDC
- ADB
- WHO, Stop TB Partnership(GDF,TBREACH)
- JICA/JATA
- Others (NGOs…)

7. Summary

- Strong political commitment & leadership
- Clear policies, strategies, guidelines, SOPs and plans
- Strong infrastructure
- Good performance
- Big financial gap in the next 6 years
- Urgent need for more resource mobilization.


Thank You!
VCAM-NTP
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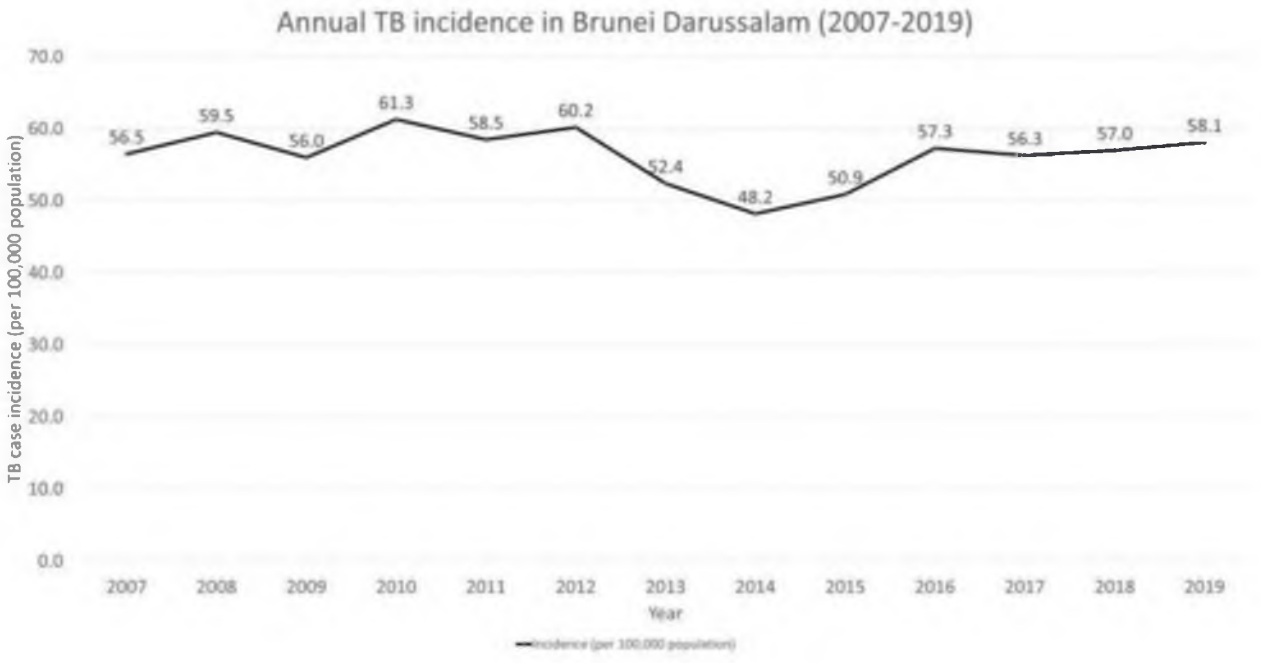
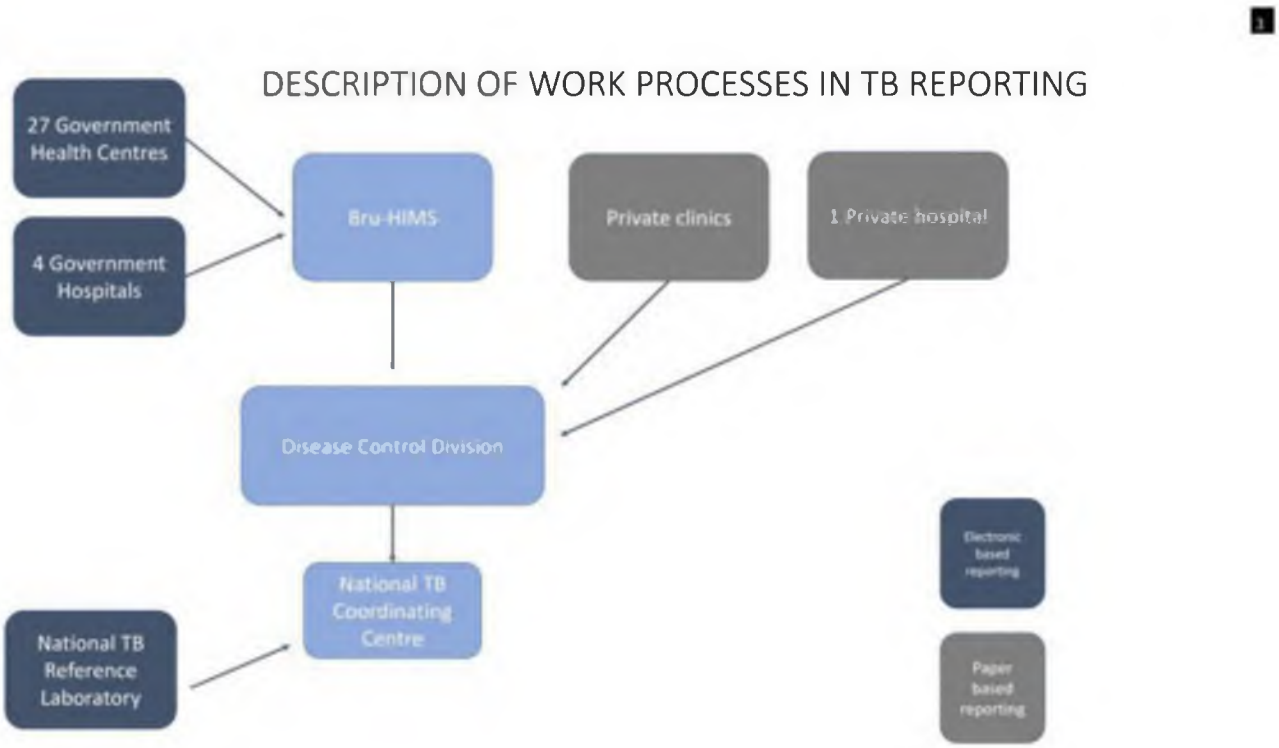
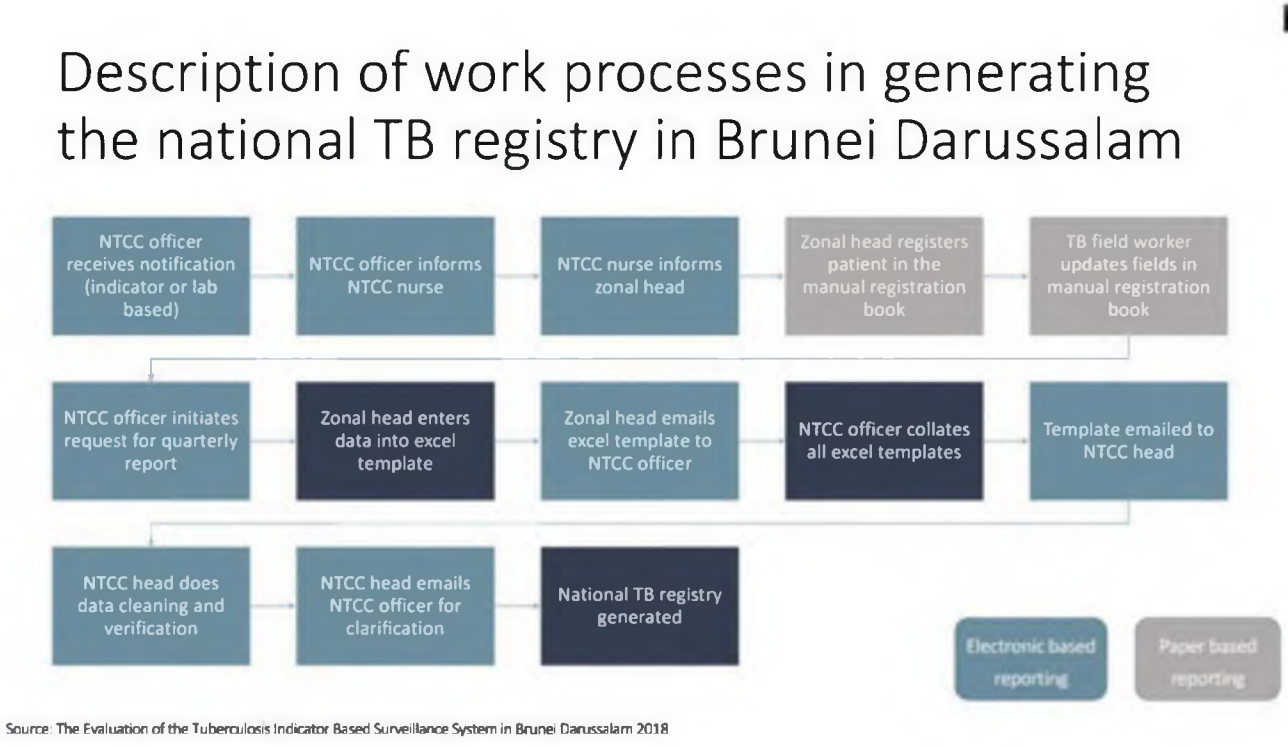
- Brunei Darussalam: ***Dr. Mohammad Fathi Alikhan "Development of a digital surveillance model for TB Control in Brunei Darussalam"***







Source: The Evaluation of the Tuberculosis Indicator Based Surveillance System in Brunei Darussalam 2018

5

Recommendations from TB surveillance system evaluation

- Encouraging accuracy of ICD-10 coding by physicians
- Increased awareness about reporting to the TB indicator-based surveillance system
- A purpose-built integrated TB surveillance system should be explored, to increase validity of data.
- Surveillance and reporting standards for TB should be introduced.

PUBLIC HEALTH BIG DATA PLATFORM ROADMAP

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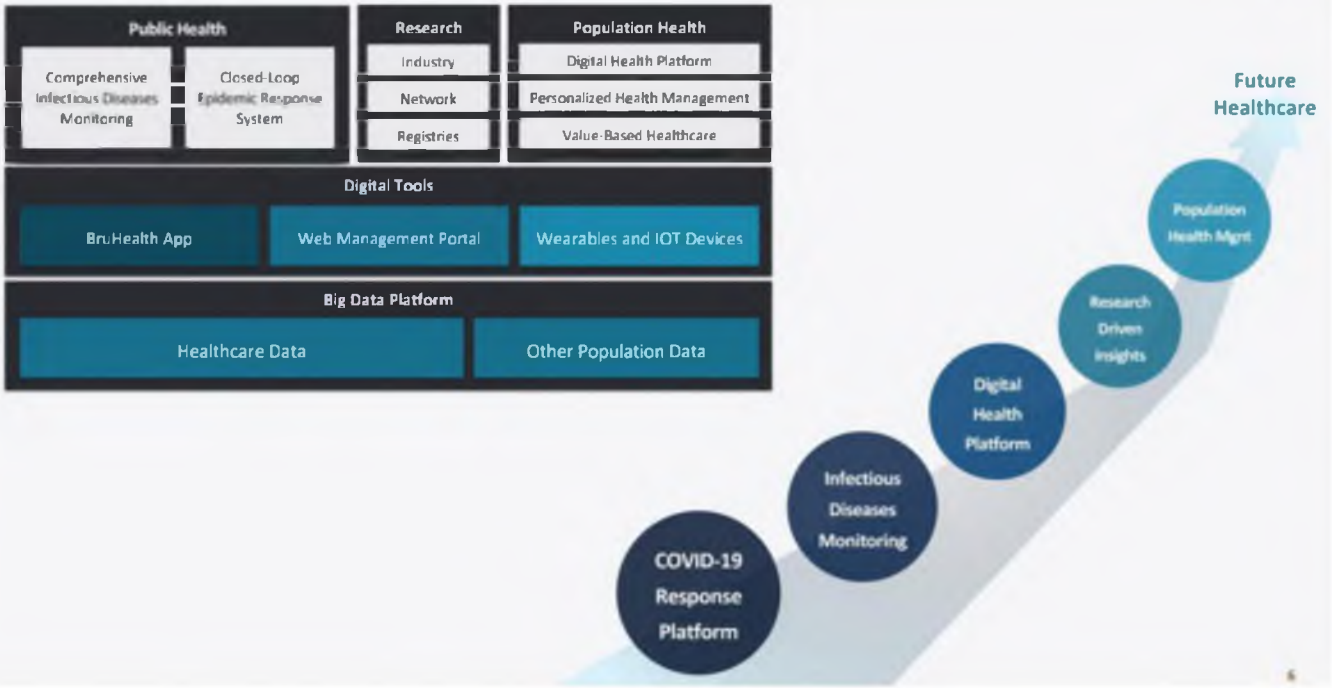
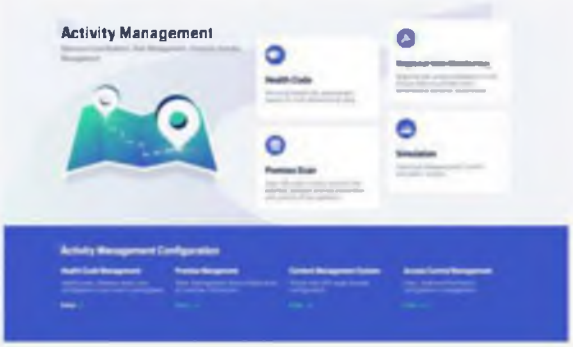


CLOSED-LOOP EPIDEMIC RESPONSE SYSTEM

7

CONNECTING THE FULL CONTINUUM OF CARE

Infectious Disease Surveillance System



TUBERCULOSIS DASHBOARD

Multi-Dimensional Contact Tracing

Complete View

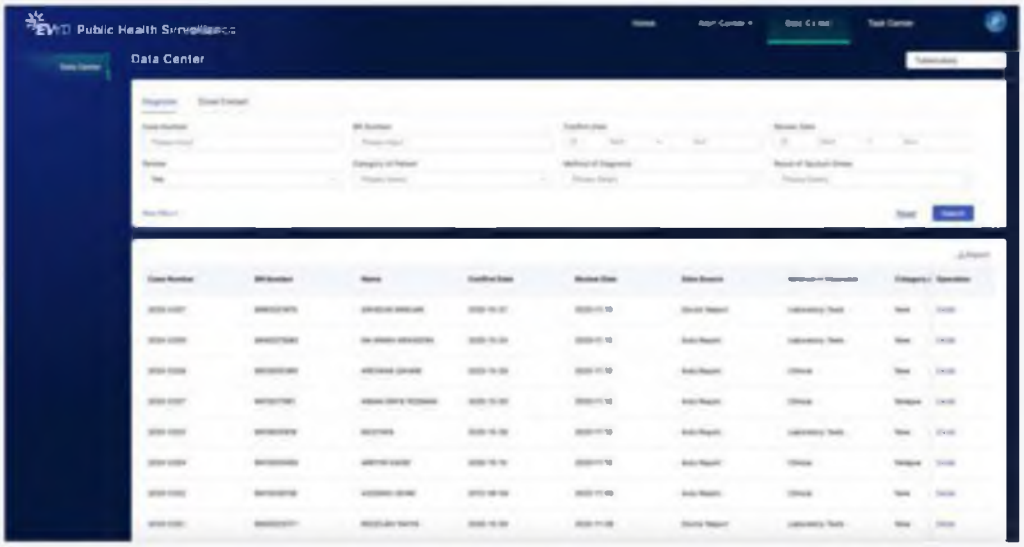
Early Detection

Timely Alert

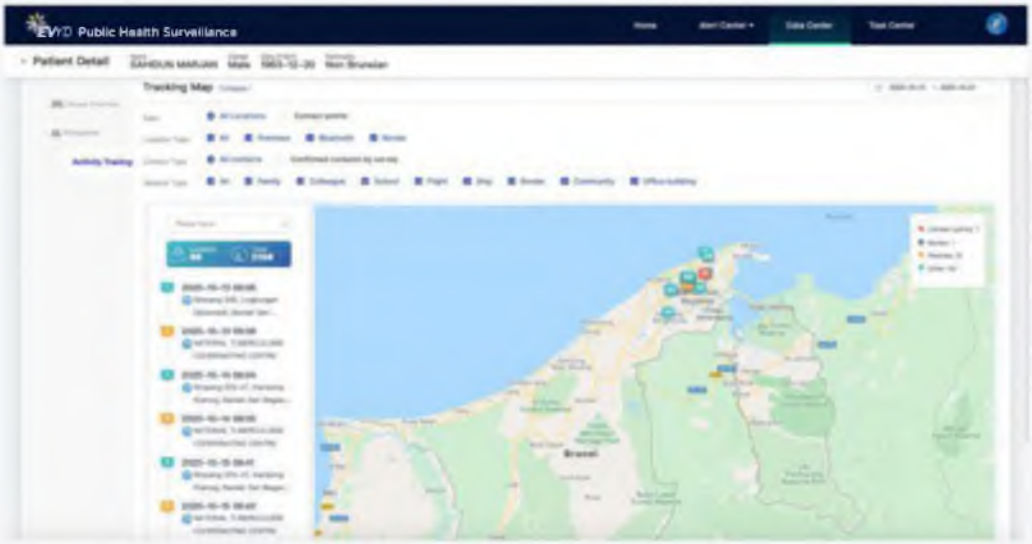
Effective Prevention

Task Centre

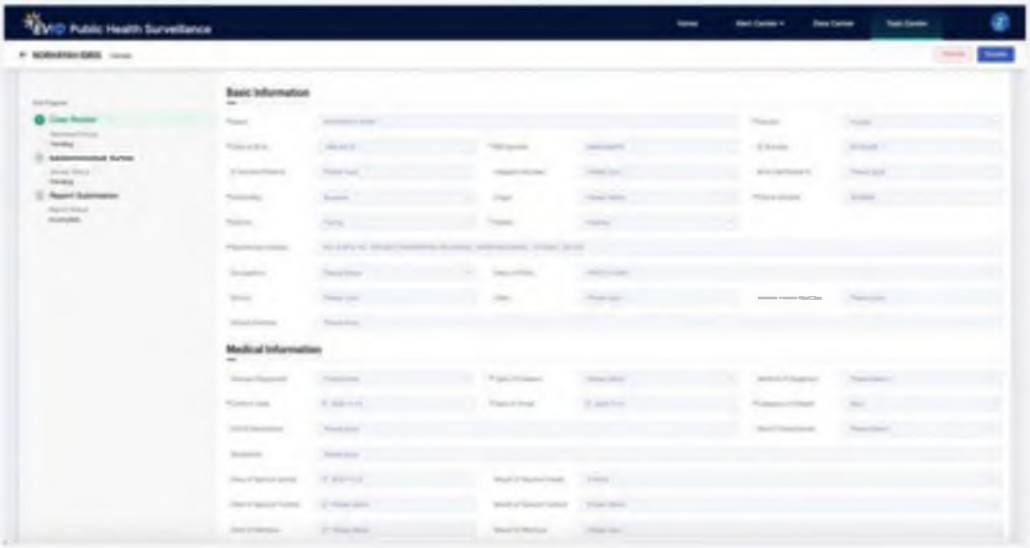
Tuberculosis Data Centre



Activity tracing

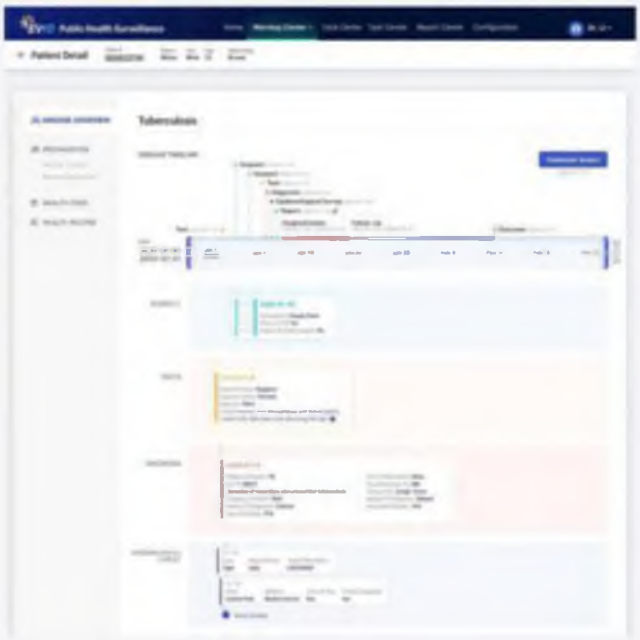


Epidemiological Surveys



TB summary dashboard

Clinician Dashboard



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Closed-Loop Epidemic Response System

Closed-Loop Population Management

(Timely React)

Prediction & Simulation

(Timely Prevention)

Multi-Dimensional Contact Tracing

(Timely Containment)

Monitoring Dashboard and Control Panel

(Timely Alert)

Real-Time Synchronization and Feedback

Real-Time Synchronization and Feedback

Real-Time Synchronization and Feedback

Data Infrastructure


THANK YOU

International Conference of Experts from the Russia Federation and the ASEAN member states

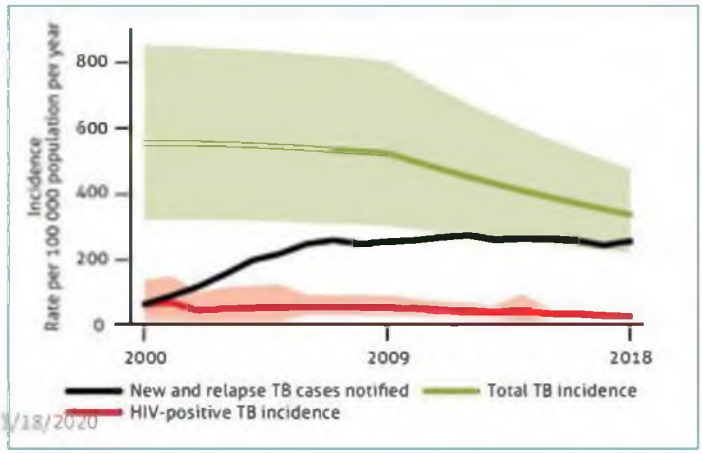
National response to TB management & control in Myanmar

Dr. Nang Saung Kham
Assistant Director (TB/Leprosy)
Eastern Shan State,MOHS, Myanmar
16th-17th .11.2020

TB Burden and Trend – in Myanmar (2018)

Source: Global TB Report 2019

2018	Number (K)	Rate (/100K)	Ranking among WHO SEARO countries
TB Incidence	181 (119-256)	338 (222-477)	3rd
TB/ HIV + Incidence	15 (10-22)	29 (19-41)	1st
MDR (RR) TB incidence	11 (7.4-16)	21 (14-30)	1st
HIV (-) Mortality	21 (12-31)	39 (23-58)	3rd
HIV (+) Mortality	3.7 (2.5-5.2)	6.9 (4.6-9.7)	



Annual Decline of Incidence: 4.9%
Case Notification Gap: 24%

Vision, Goal and Objectives on Ending TB in Myanmar

Vision: Myanmar free of TB

Zero deaths, disease and suffering due to TB by 2050

Goal: End TB epidemic in Myanmar

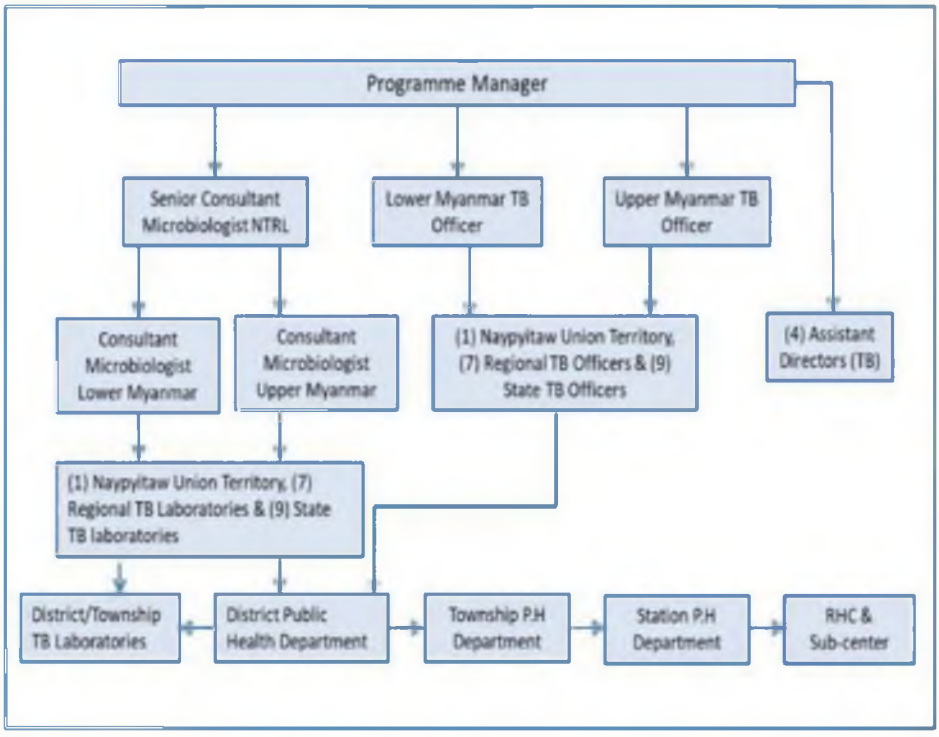
Fewer than 10 cases per 100,000 population by 2035

Objective 1: accelerate the decline in the prevalence of drug-sensitive and drug-resistant TB

Objective 2: fully integrate TB prevention and care in Universal Health Coverage

Objective 3: enhance the prevention of TB, particularly for high-risk populations

National TB Programme structure and staffing



Strength

- Well structured
- Supported by seconded staffs
- Committed staffs at all levels
- New PHS II appointments

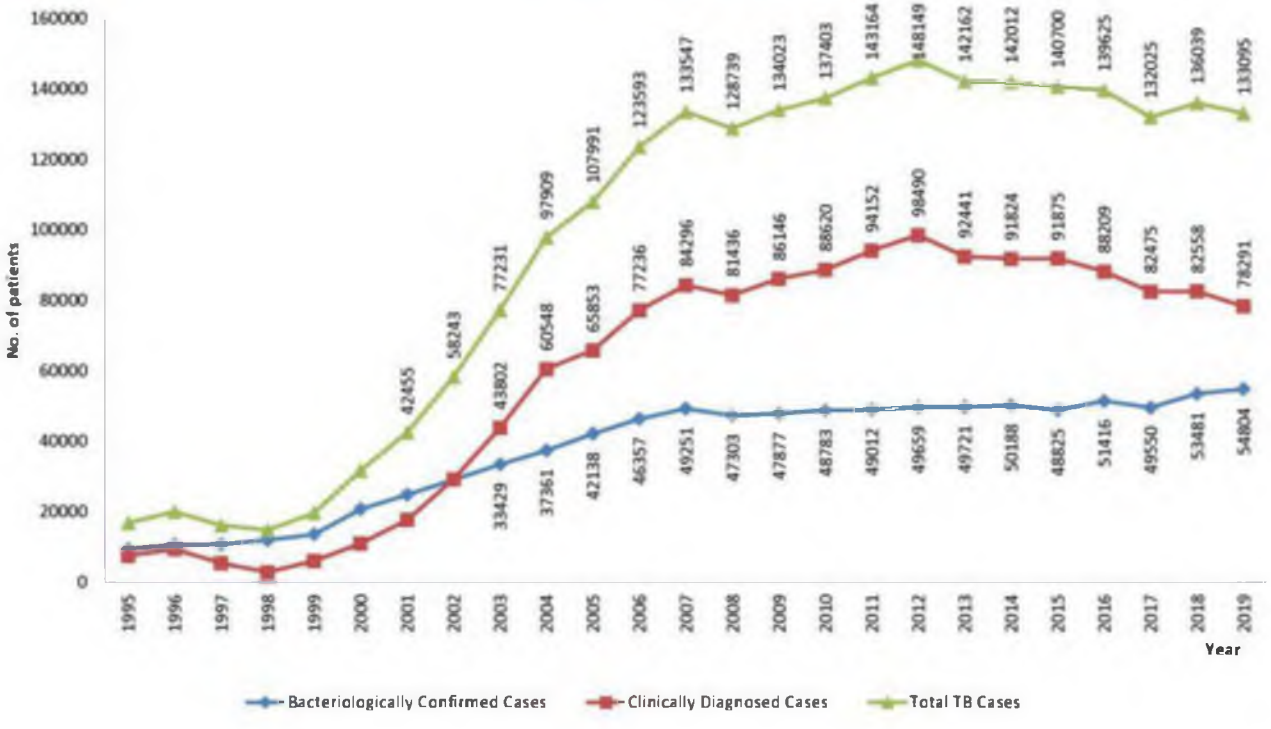
Challenges

- HR limitation *(Only 30% of posts are filled)*
- Depend on seconded staffs in some areas
- High staff turnover

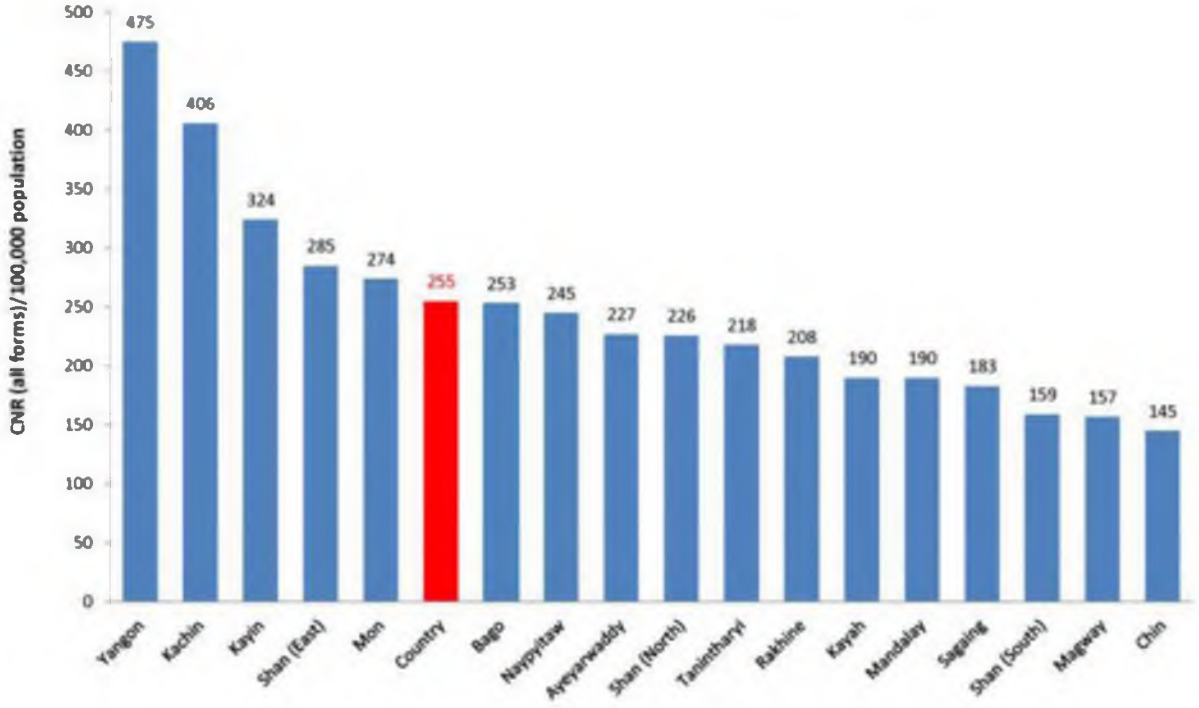
Multisectoral Accountability

- TB is a **priority disease** of the country
- Government **funding** contribution **increased** for TB care & control
- Policy statement on **Mandatory TB Case Notification** by MoHS (24th Sep 18)
- Consultation workshop on **Multi-Sectorial Action to End TB** was conducted with related Ministries, Donors, UN, WHO, EHO & Implementing Partners
- Better **engagement & collaboration with civil society** for TB case finding, case holding & health education
- **Engagement with MMA & Myanmar Private Hospitals Associations** for mandatory TB case notification

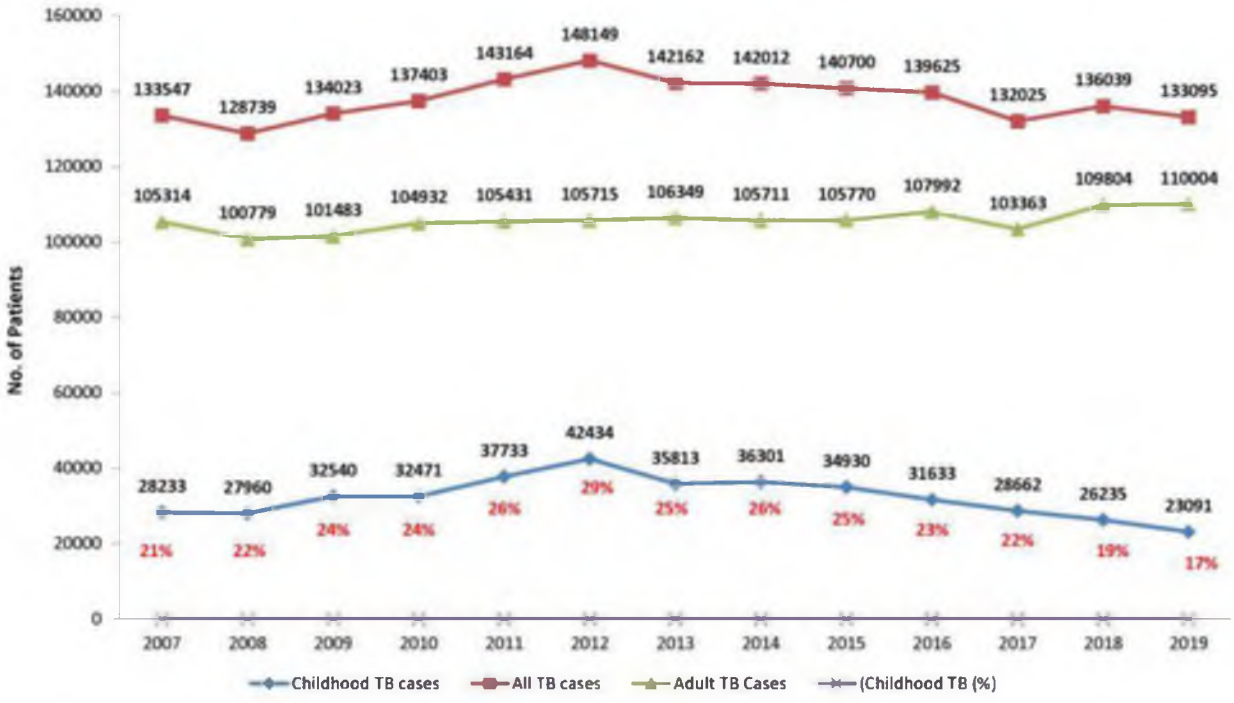
Trend of Total TB Case Notification (1996-2019)



Case Notification Rate(CNR) (all forms) according to States/Regions, 2019

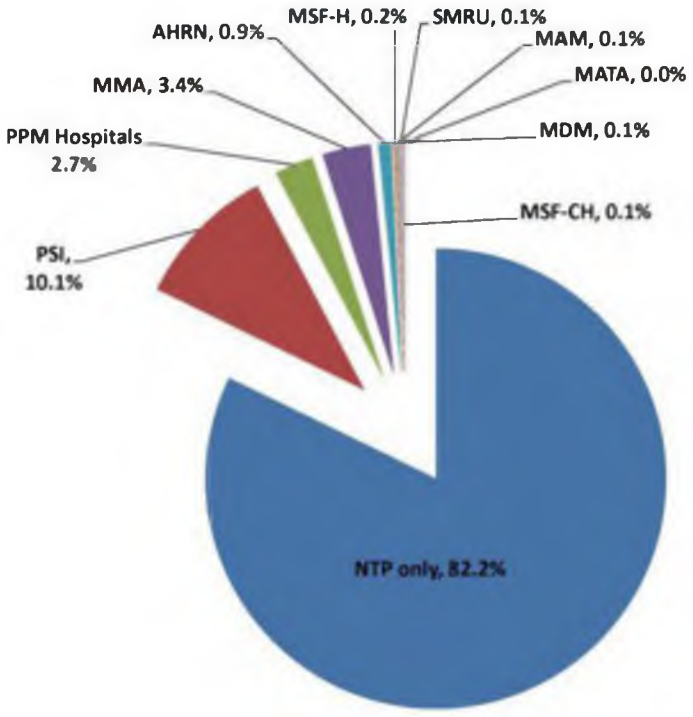


Trend of Childhood TB cases (2007- 2019)

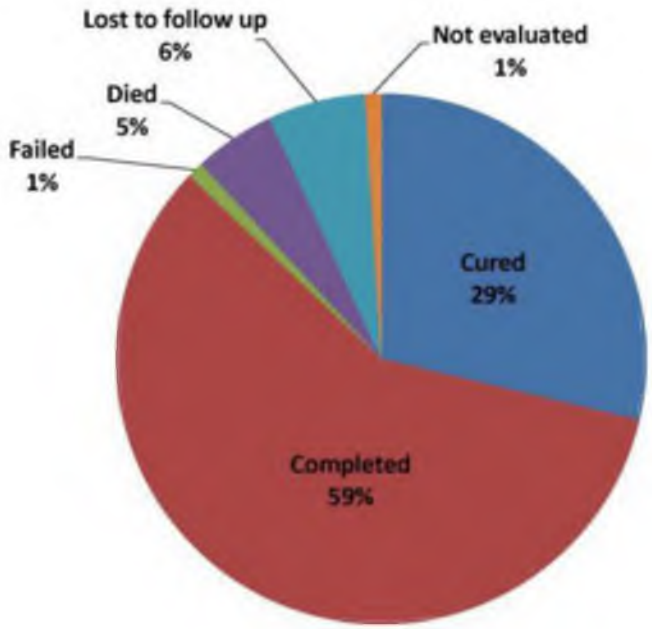


Proportion of Childhood TB cases, 2019

Proportion of Total TB cases contributed by NTP & Other Partner units in 2019 (n=133095)

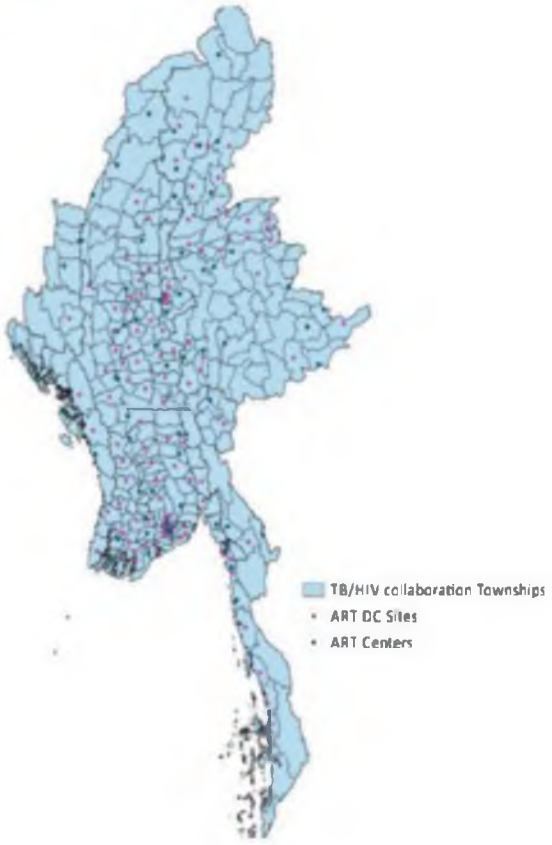


Treatment Success Rate(TSR) (all forms), 2018 Cohort (88%)

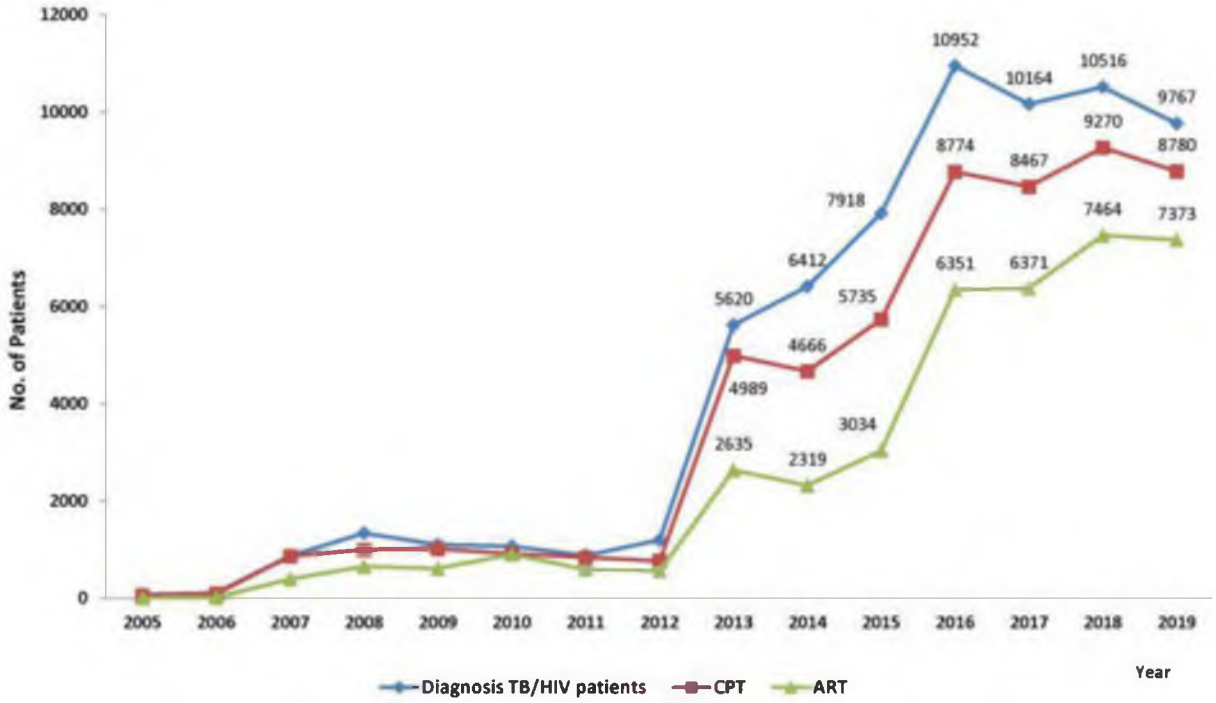


TB/HIV collaborative townships and ART centers/ DC sites

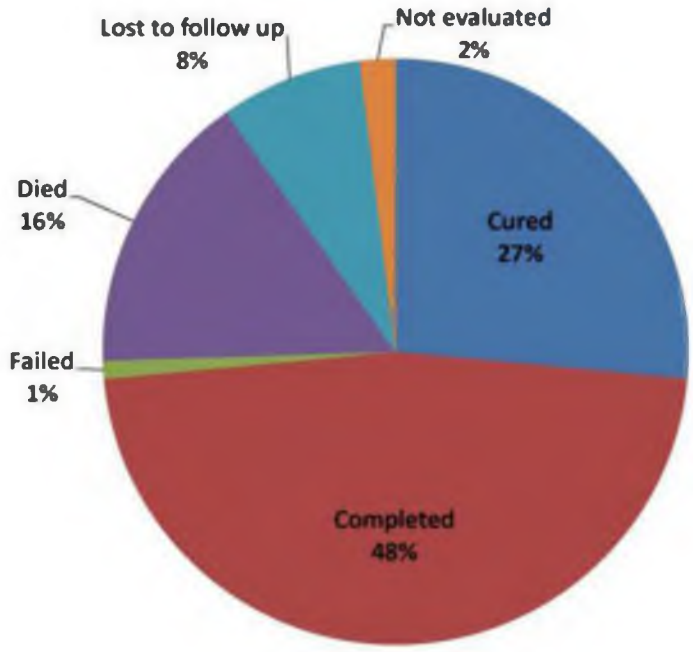
- Initiated in **7 townships** since **2005**
- Gradually expanded to **28 townships** by **2013**
- Scaled up to 108 townships in 2014; covering **a total of 136 townships** in 2014
- Scaled up to 100 townships in 2015; covering a total of **236 townships**
- Scaled up to **94 townships** in 2016; covering all **330 townships** in 2016.



Trend of TB/HIV Collaborative Activities



Treatment outcomes of TB/HIV cases registered in 2018 cohort



TSR 75%

Coverage of TB Diagnostic Services in Healthcare Facilities

- **Microscopy and X-ray**: all townships & some stations levels
- **Microscopy, X-ray & GeneXpert**: all States/Regions, District levels and some high burden townships

- 526 sputum smear microscopy centers (with 158 iLED Fluorescent MS) under EQA system
- 108 machines with GeneXpert MTB/RIF upto now
- 3 Culture/DST Centers (Yangon, Mandalay & Taunggyi)
- 2 Reference Laboratories for 2nd line LPA (Yangon & Mandalay)

Programmatic Management of Drug-resistant TB (PMDT)

Status of uptake of 2019 WHO consolidated guidelines on DR-TB treatment

- Bedaquiline registration is under process with FDA
- Ordered treatment courses: 358 for IFFO; 359 for pre-XDR & XDR; 12 for pediatric; 561 to replace Am intolerance; 107 for patients requiring treatment extension beyond 6 months
- Transition plan to new treatment regimen is under process
- Some Operational Research on shorter treatment regimen is still in process

Best practices

Follow updated WHO's guidelines & recommendations according to local context under National Expert DR-TB committee's Guidance

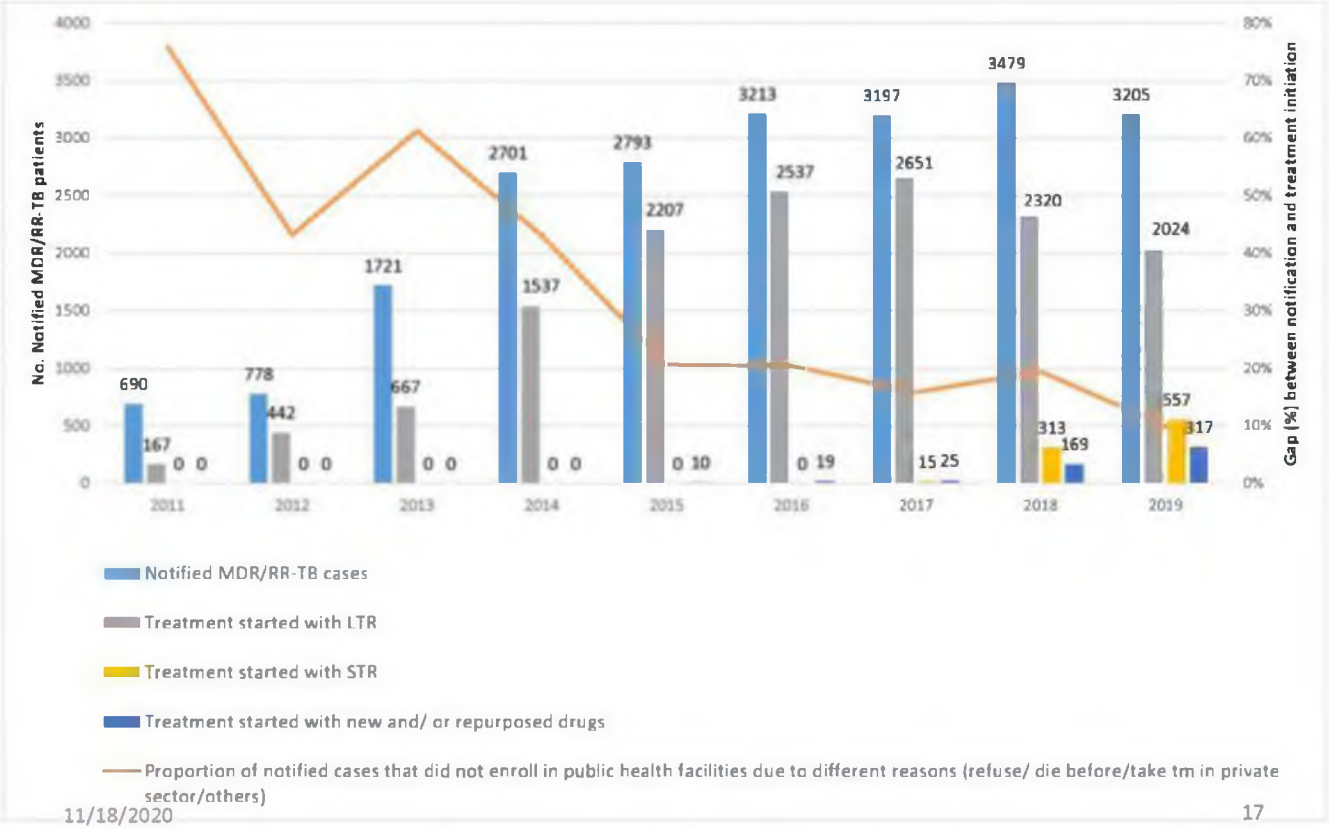
Challenges in PMDT

HR limitation

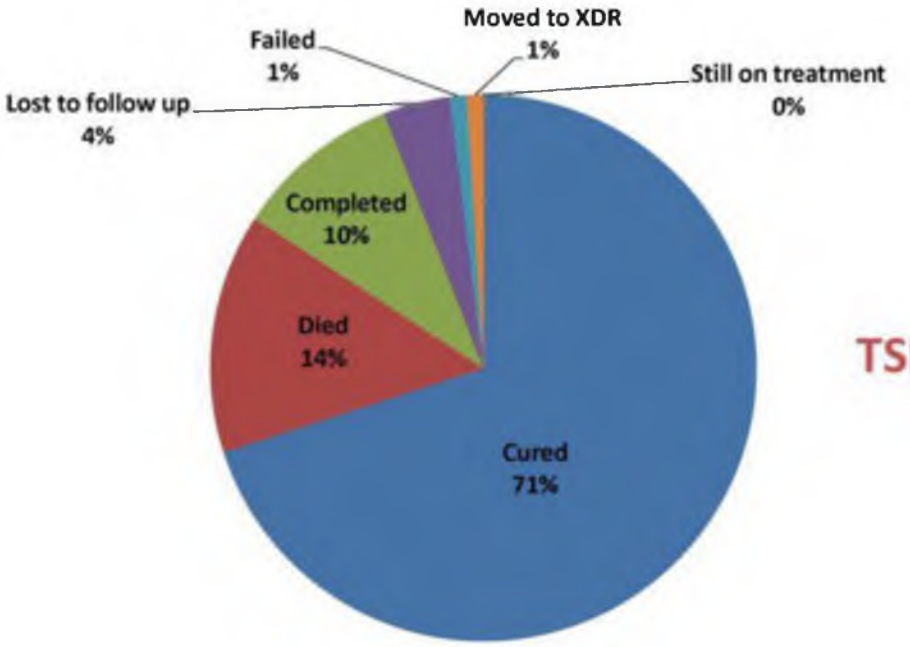
Gap between notified & enrolled MDR-TB pts

Lab capacity & extra infrastructure/maintenance

Comparison of Notified MDR/RR-TB cases and Treatment initiation 2011 - 2019



Treatment outcomes 2017 PMDT cohort n=2621, TSR=81%



TSR 81%

TB Preventive Treatment (TPT)

Target populations

- **PLHIV & child contacts of TB patients (< 5 years)**
- All childhood & household contacts (<35 years) *considered to be expanded in next NSP*

TPT Regimen

- **6H is currently in use**
- Plan to do operational research on 3HP and 3RH *(scale up of these shorter regimens depending on pilot results)*
- Plan to develop national guideline for LTBI

- Usage of CXR before TPT is under consideration
- Consultation meeting for LTBI with NAP, physicians & paediatricians (27th Sept 2019)
- Central level workshop for LTBI (18th Oct 2019)
- TPT among PLHIV: 17.5% (6531/37402) in 2017, 15.5% (5776/37277) in 2018 & 23.6% (4209/17835) in 2019 up to June
- TPT among Under 5 years old: 337 in 2017, 534 in 2018 and 1218 in 2019.

Intensified case-finding and systematic screening

Overall Strategy

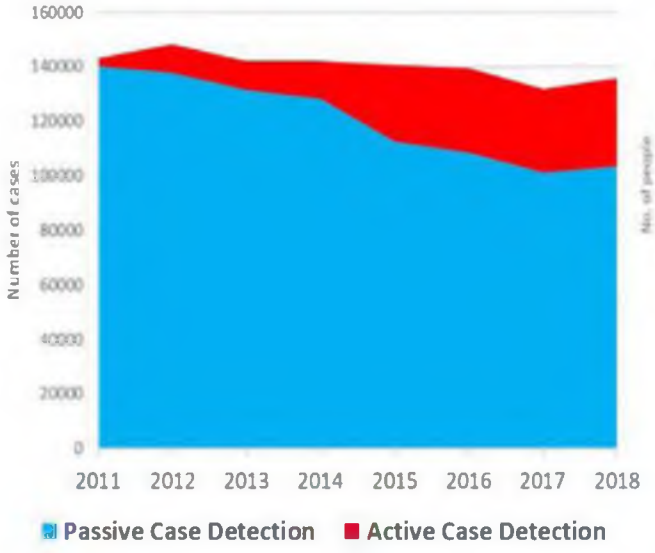
- To strengthen missing TB cases especially in high-risk groups such as migrants, elderly, prisoners, patients with other co-morbidity, etc.

Key Interventions

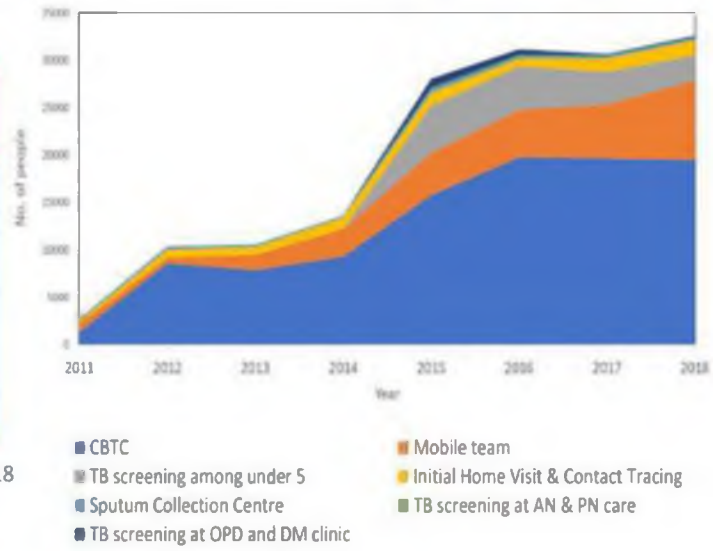
- **Community based TB care**
  - General community, Volunteers from NGOs)
- **Mobile Team activities**
  - Hard to reach area, mobile teams from NTP & NGOs
  - Prison/worksites, mobile teams from NTP
  - Industrial areas and camps, mobile teams from NTP
- **TB/HIV**
  - NTP & NAP
- **TB/DM**
  - NTP & clinic staffs
- **TB screening among AN/PN mothers**
  - MCH staffs
- **TB screening among under 5**
  - MCH staffs
- **Mandatory notification of TB**
  - Non PPM Partners

Key Achievements in finding the missing cases

All forms of TB found by ACD & PCD



Achievement of ACD (2011-2018)



Community and civil society engagement

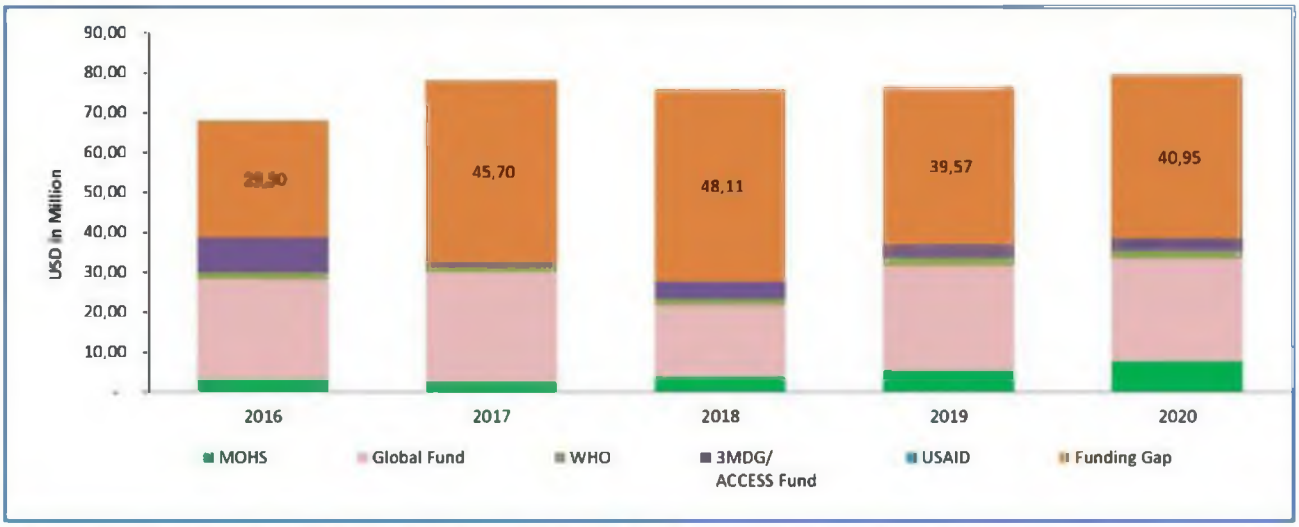
Community-based service delivery

- Among 330 townships, 245 are covered by Community Based TB Care
- Activities carried out by Community volunteers from 11 INGOs, 6 local NGOs and 3 EHOs.
- Malaria volunteers from some NGOs also perform Community Based Activities
- Main activities:
  - Health education & community mobilization
  - Symptoms screening & referral of presumptive TB cases
  - Household contact tracing
  - Treatment support & sputum transportation

Universal health coverage & social protection schemes

- **For All Patients -**
  - BGC vaccination
  - TB diagnosis
  - TB care & treatment (Free of charge)
- **For DR-TB patients -**
  - Monthly incentives,
  - Nutritional support &
  - TA

TB Programme Financing



Opportunities

- Government Funding increased
- New Global Fund concept note is in progress
- Other funding sources

Challenges

- Funding sustainability beyond 2020
- Rely on international funding

National TB monitoring, evaluation & surveillance system

- Dissemination of Prevalence survey results in 2019
- Joint Monitoring Mission in 2019
- 4th National drug resistant survey in 2020
- Plan to conduct patient cost survey in next NSP period
- DS-TB Case-Based Recording & Reporting was piloted in Mon State in 2019
- Plan to expand DS-TB Case-Based Recording & Reporting to all townships in next NSP period

Challenges

- Transition from paper based to electronic based reporting
- Limited number & capacity of HR

National strategy for TB research

- A National TB Research Strategy exists under Strategic Direction 3 of current NSP
- In 2017, National Operational/Implementation research agenda was developed with 8 thematic areas
- International support was the main funding source
- MoHS have started to finance for selected research
- NTP collaborate with Department of Medical Research, WHO & The Union (SORT-IT)
- Among 38 research topics, 22 have been completed

Strength

- Many NTP staffs have been trained under national & international researchers

Challenge

- Staffs are already overloaded with other activities & require additional time to conduct operational research

National Strategic Plan for TB (NSP) 2021-2025

Timeframe

- Draft NSP& Revision (Oct19)
- Stakeholder review of NSP draft (Nov19)
- Operational Plan (Nov19)
- M&E Plan (Nov19)
- Finalization & Costing workshop (Dec19)

Stakeholders

- Departments of MoHS
- Ministry of Home Affair (Prison Health)
- Social Security Board
- Defence Services Medical Academy
- UN & WHO
- LNGOs, INGOs, CSO and CBO
- Donor agencies

Monitor NSP by annual targets according to M&E Plan

Overview of progress, challenges & urgent actions needed to achieve high-level End TB commitments and targets

including 40 million people on treatment & 30 million people on preventive treatment by 2022

Strengths

- Government commitment: Increase funding support
- Mandatory Case Notification: Detect under reported cases
- Accelerated Case Finding Activities: Detect missing cases

Challenges

- Human Resource Limitation
- Universal DST (Sputum transportation)
- Funding sustainability beyond 2020

Key Actions for 2020

- Decentralization of diagnosis service to Station Hospitals
- Expand X-ray facilities in collaboration with Department of Medical Services
- Introduction of new diagnostic tools: GeneXpert Ultra, TB LAMP after pilot period
- High level advocacy meeting for TPT, New TPT regimen

- Russia: ***M.D, PhD, Prof. Valentina Aksenova "Management of latent TB infection in children in Russia"***

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

Национальный медицинский исследовательский центр фтизиопульмонологии и инфекционных заболеваний Минздрава России

Management of latent TB infection in children in Russia

V.A. Aksenova
Federal State Budgetary Institution National Medical Research Center of Phthisiopulmonology and Infectious Diseases, Russian MoH, Moscow, Russia

29.10. 2020 г.

Quick facts

- Globally, at least **1.12 million** children (<15y) become ill with TB every year[1] (~581,000 boys and 538,000 girls in 2018), **47% under 5 years of age**
- Children represent about 11% of all TB cases; higher (15%) in high burden countries.
- In 2018, **205,000 children died** of TB (~560 children per day!) including **32,000** TB deaths (16%) among children who were living with HIV [1]
- **18% of children with TB died, compared to 15% overall number of people with TB who died in 2018**
- Researchers estimate that 67 million children are infected with TB (7.5 million every year) and therefore at risk of developing disease in the future[2].
- Researchers estimate that **25,000 children develop multi-drug resistant TB** every year[2].
- Data on TB among adolescents (10-19y) cannot be easily analysed as countries report by 0-4, 5-14 years (children) and 15-24

[1] Global Tuberculosis Report, World Health Organization 2019; [2]. Dodd P., et al, 2016

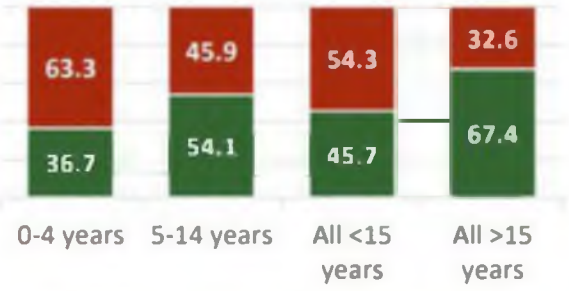
World Health Organization GLOBAL TB PROGRAMME END TB

[1] Доклад о глобальной борьбе с ТБ, Всемирная организация здравоохранения 2019; [2]. Dodd P., et al, 2016

Case detection and prevention gaps 2018

The case detection gap

% of missing TB patients in different age groups



The prevention gap

In 2018, **72.5%** of almost 1.3 million eligible contacts <5 years **did NOT access TB preventive treatment (TPT)**

World Health Organization | GLOBAL TB PROGRAMME | END TB

Annemieke Brands, WHO Global TB Programme

World Health Organization

END TB

WHO policy update on prevention, diagnosis and treatment of TB in children & adolescents

Priority of prevention in the Russian Federation

Federal Law of the Russian Federation of November 21, 2011 No. 323-FZ "On Fundamental Healthcare Principles in the Russian Federation", Ch. 2, Art. 4,

- Cl. 3 Priority of children's health

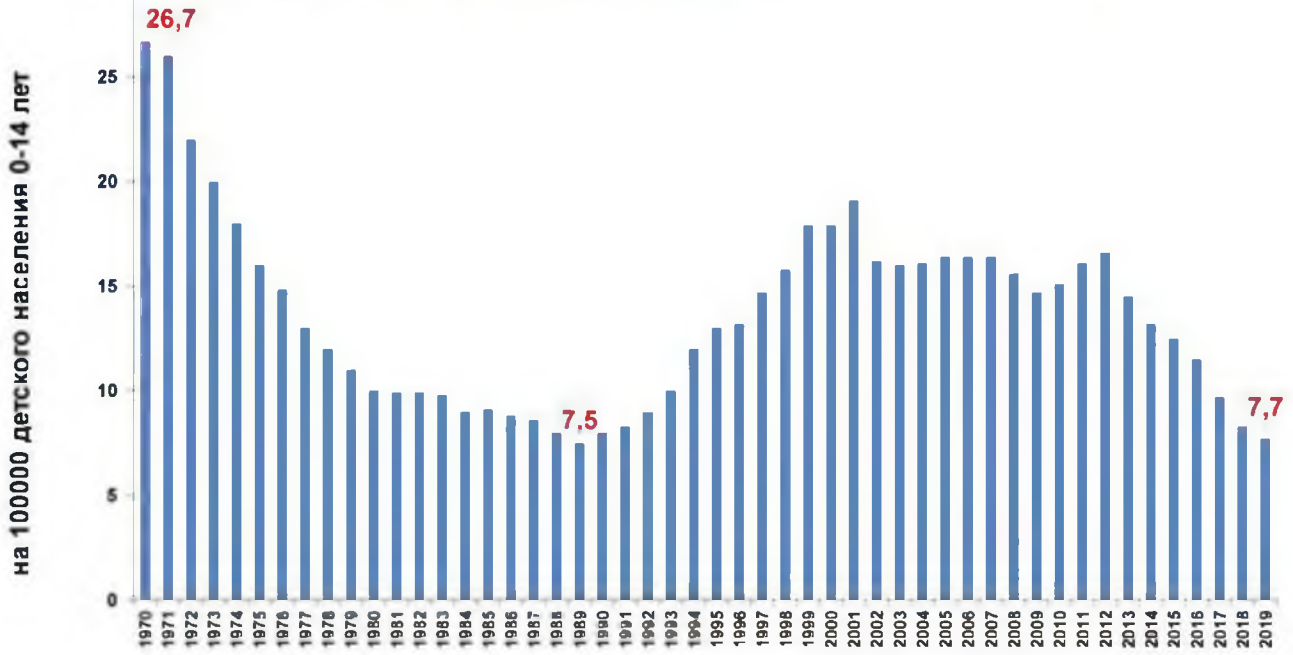
- Cl. 8 Priority of prevention in healthcare

Morbidity rate in children and adolescents in the Russian Federation with regard to active tuberculosis show positive trends

Incidence of tuberculosis in children 0-14 years old in Russia

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

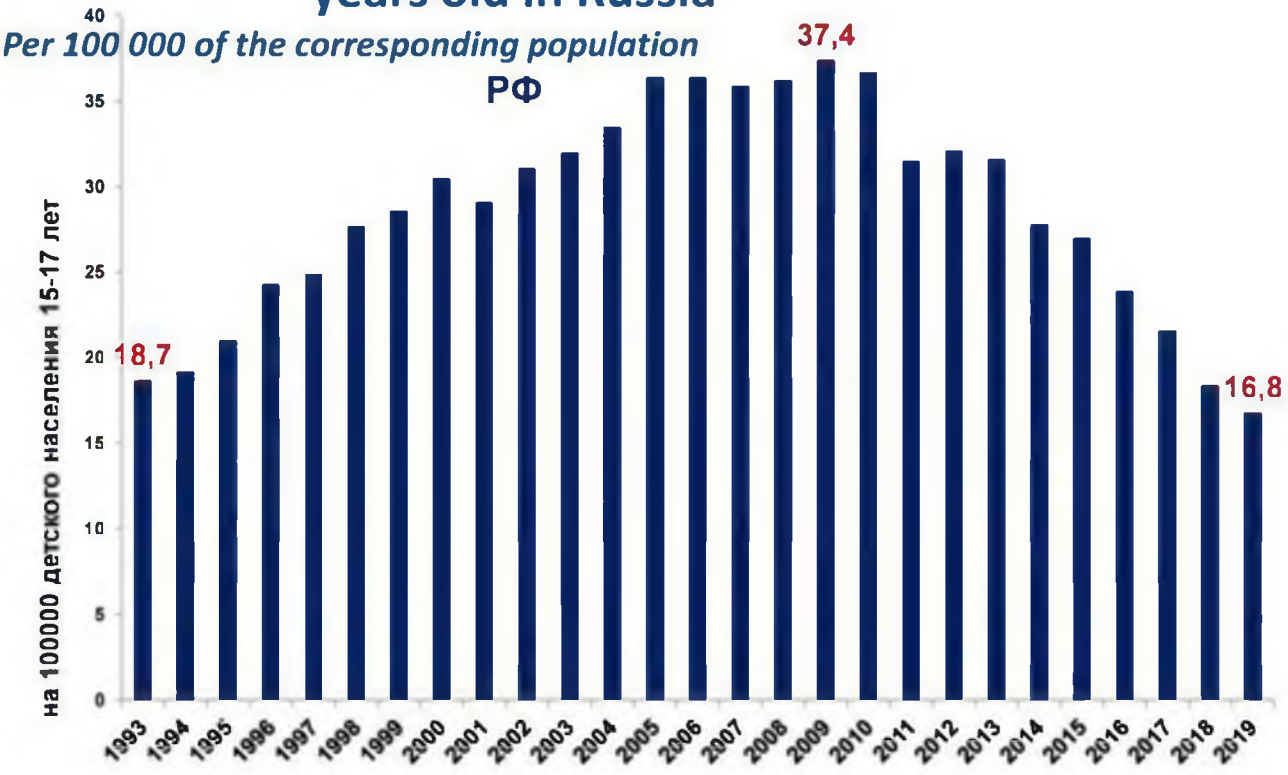
Per 100 000 of the corresponding population



Incidence of tuberculosis in adolescents 15-17 years old in Russia

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

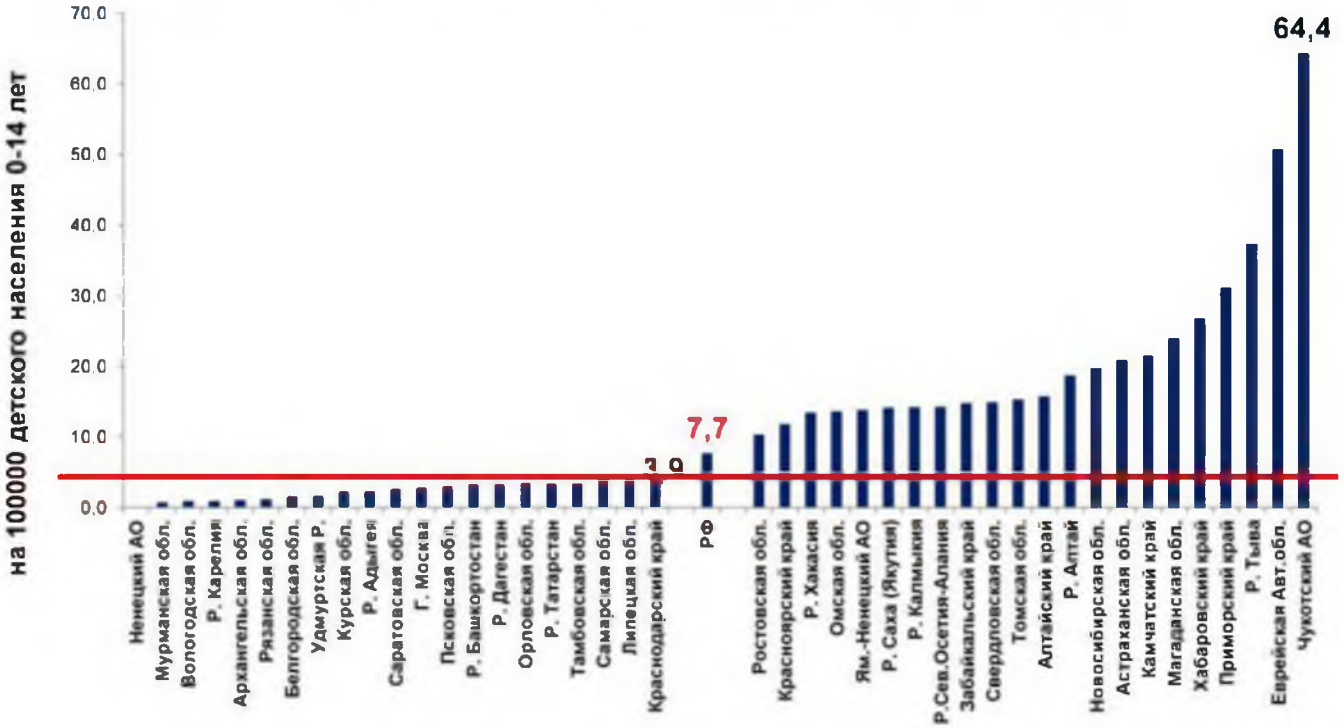
Per 100 000 of the corresponding population



Incidence of tuberculosis in children 0-14 years old in Russia

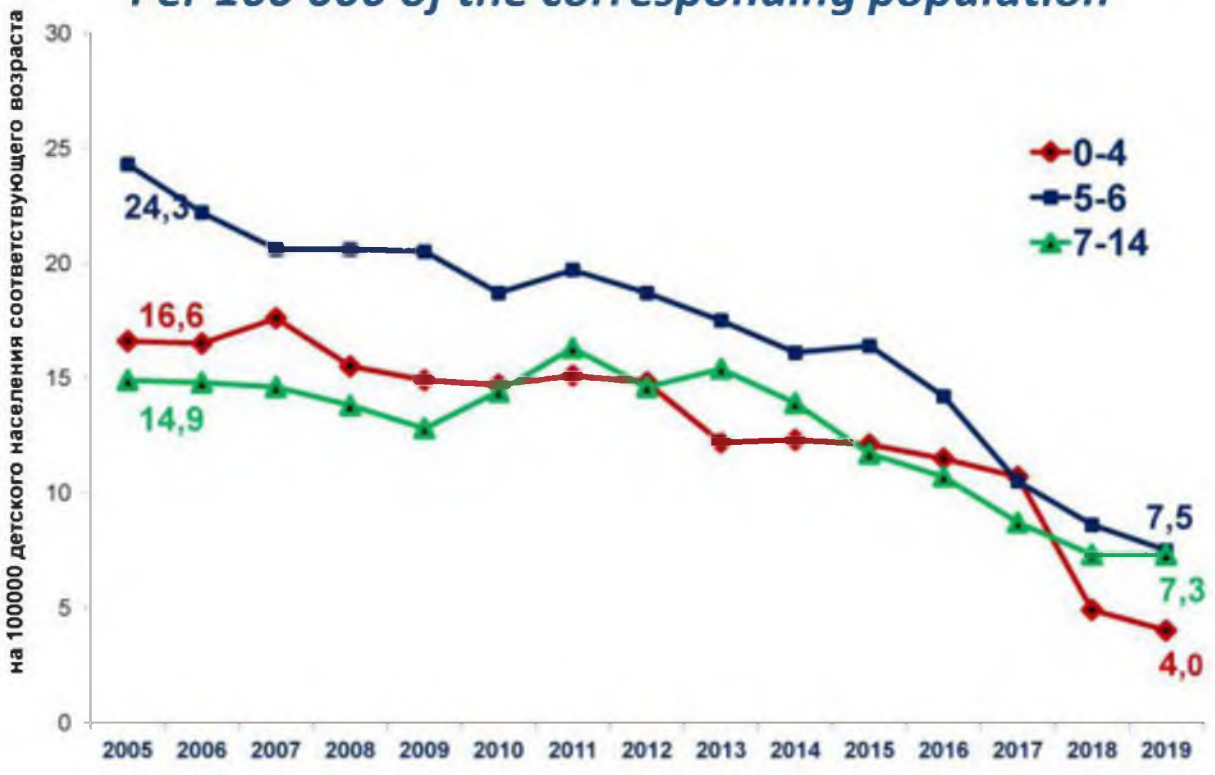
Per 100 000 of the corresponding population

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

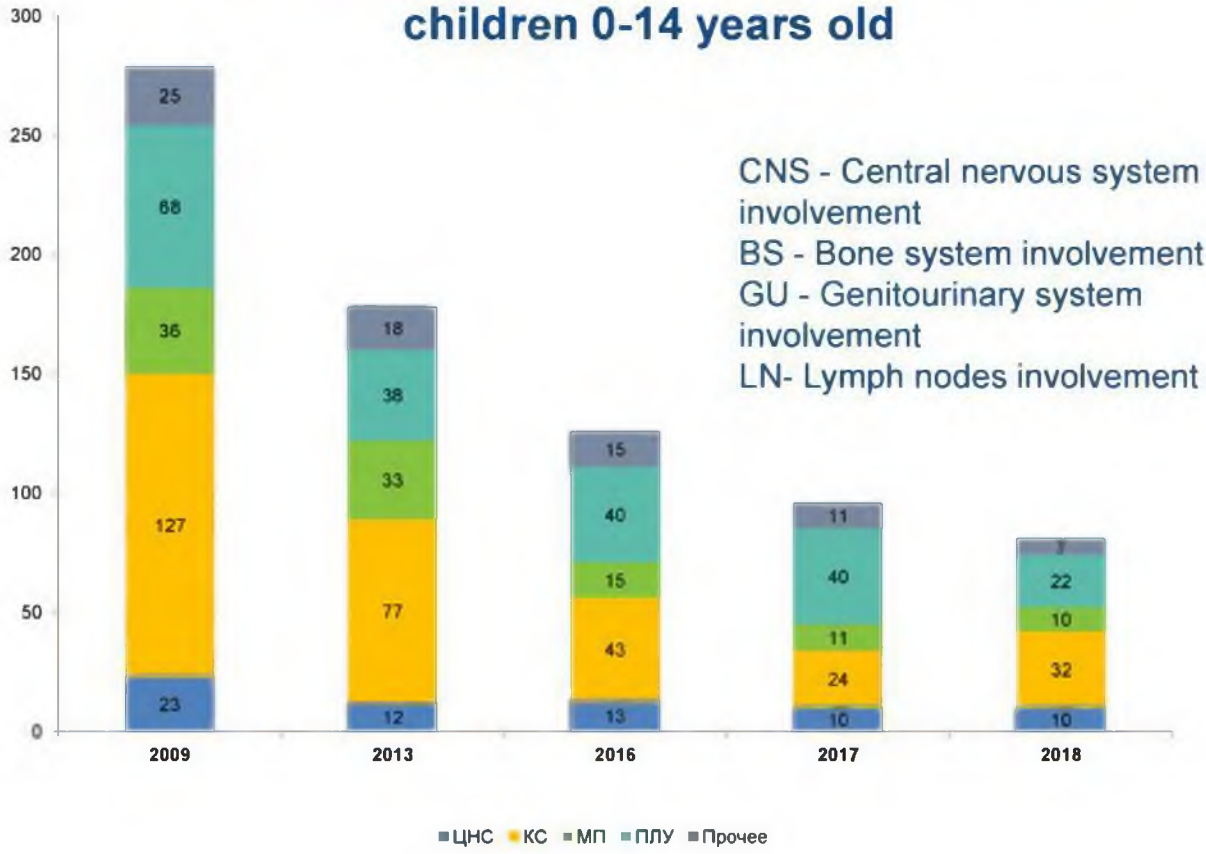


Incidence of tuberculosis in children 0-14 years old in Russia

Per 100 000 of the corresponding population



Non-respiratory tuberculosis incidence in children 0-14 years old



World Health Organization

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

In countries where BCG vaccination is carried out, it is recommended to use IGRAs tests more widely for the diagnosis of Latent Tuberculosis Infection.

It is important to identify high-risk groups of children for the country.

Child & Adolescent TB Working Group

Priority of prevention

http://apps.who.int/

Всемирная организация здравоохранения, 2018

New-generation immunological tests

Intradermal injection of two proteins joined together ESAT6+CFP10 *in vivo*

Diaskintest (2009) Russia

C-Tb skin test (2014) Denmark

Interferon-Gamma Release Assays (IGRAs) –in vitro

ELISPOT (2001) England

Quanti FERON-TB Gold (2005) США

Quanti FERON-TB Gold Plus (2015) США

(sensitivity 78-93%; specificity– 87-99%)

The information provided is not an advertisement

ERS, GiolettDelia i, MD, Ph.D

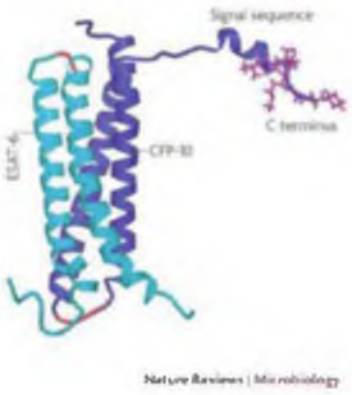
Translational Research Unit, Department of Epidemiology and Preclinical Research, "Lazzaro Spallanzani" National Institute for Infectious Diseases (INMI), IRCCS, Rome, Italy

IGRA-SKINTEST (C-Tb)

OVERVIEW OF SKIN TEST PRODUCTS

STATENS SERUM INSTITUT

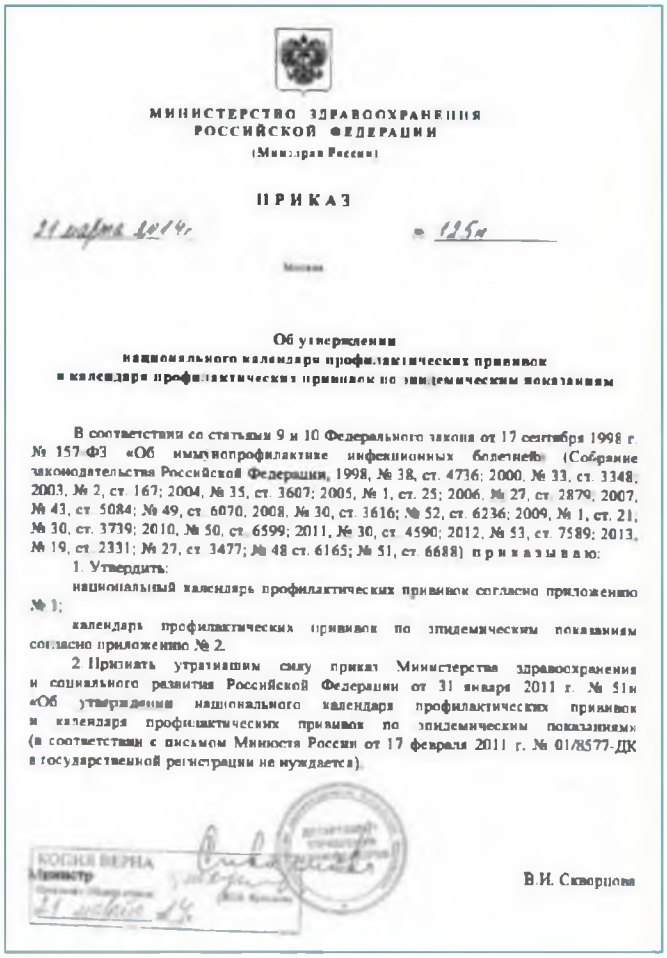
	C-Tb (SSI, DK)	DIASKINTEST (Pharmstd, Ru)
Development	Phase III	On market (Ru, Ukr, Kazak)
Composition	rdESAT-6 + rCFP10	rESAT-6:CFP10
Expression system	L. Lactis	E. Coli (his-tag?)



Nature Reviews | Microbiology

- Russian scientists have developed recombinant protein CFP10-ESAT6, produced by *Echerichia coli BL21(DE3)/pCFP-ESAT* - Diaskintest (DST)
- DST used as skin test, the same way as the Mantoux test
- Dosage = 0.2 mcg/0.1 ml
- The advantages of DST-test are: simplicity of using and low expenses.
- DST-test is registered in Russia for all ages and included in some screening programs

The legal framework regulating works on early diagnostics and prevention of TB in children has been updated in the Russian Federation



МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ
(Минздрав России)

ПРИКАЗ

21 марта 2014 г. № 125н

Москва

Об утверждении
национального календаря профилактических прививок
и календаря профилактических прививок по эпидемическим показаниям

В соответствии со статьями 9 и 10 Федерального закона от 17 сентября 1998 г. № 157-ФЗ «Об иммунопрофилактике инфекционных болезней» (Собрание законодательства Российской Федерации, 1998, № 38, ст. 4736; 2000, № 33, ст. 3348; 2003, № 2, ст. 167; 2004, № 35, ст. 3607; 2005, № 1, ст. 25; 2006, № 27, ст. 2879; 2007, № 43, ст. 5084; № 49, ст. 6070; 2008, № 30, ст. 3616; № 52, ст. 6236; 2009, № 1, ст. 21; № 30, ст. 3739; 2010, № 50, ст. 6599; 2011, № 30, ст. 4590; 2012, № 53, ст. 7589; 2013, № 19, ст. 2331; № 27, ст. 3477; № 48 ст. 6165; № 51, ст. 6688) п р и к а з ы в а ю:

1. Утвердить:

национальный календарь профилактических прививок согласно приложению № 1;

календарь профилактических прививок по эпидемическим показаниям согласно приложению № 2.

2. Признать утратившим силу приказ Министерства здравоохранения и социального развития Российской Федерации от 31 января 2011 г. № 51н «Об утверждении национального календаря профилактических прививок и календаря профилактических прививок по эпидемическим показаниям» (в соответствии с письмом Минюста России от 17 февраля 2011 г. № 01/8577-ДК в государственной регистрации не нуждается).

КОПИЯ ВЕРНА

Министр

В.И. Скворцова

A new national immunization schedule was approved in 2014

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ

ЗАРЕГИСТРИРОВАНО

ПРИКАЗ

КОПИЯ ВЕРНА

Registered in the Ministry of Justice of the Russian Federation on May 31, 2017
Registration No. 46909
APPROVED by the
Order of the Ministry of Health
of the Russian Federation **of March 21, 2017 No. 124н**
THE PROCEDURE AND TERMS OF PREVENTIVE MEDICAL EXAMINATIONS OF POPULATION, AIMED AT TB DETECTION

8. Профилактические осмотры представляют собой комплекс медицинских вмешательств, направленных на выявление патологических состояний, свидетельствующих о наличии туберкулеза, с применением следующих методов обследования в зависимости от возраста:

а) дети в возрасте от 1 до 7 лет (включительно) – иммунодиагностика с применением аллергена бактерий с 2 туберкулиновыми единицами очищенного туберкулина в стандартном разведении;

б) дети в возрасте от 8 до 14 лет (включительно) – иммунодиагностика с применением аллергена туберкулезного рекомбинантного в стандартном разведении;

в) дети в возрасте от 15 до 17 лет (включительно) – иммунодиагностика с применением аллергена туберкулезного рекомбинантного в стандартном разведении или рентгенологическое флюорографическое исследование органов грудной клетки (легких);

Government Decree of August 9, 2017 No. 952 "Concerning the Annulment of Certain Acts of Legislation of the Russian Federation"

ПРАВИТЕЛЬСТВО РОССИЙСКОЙ ФЕДЕРАЦИИ

ПОСТАНОВЛЕНИЕ

от 9 августа 2017 г. № 952

МОСКВА

О признании утратившими силу отдельных положений актов Правительства Российской Федерации

Правительство Российской Федерации постановляет:

1. Признать утратившим силу

абзац второй пункта 1 постановления Правительства Российской Федерации от 25 декабря 2001 г. № 892 "О реализации Федерального закона "О предупреждении распространения туберкулеза в Российской Федерации" (Собрание законодательства Российской Федерации, 2001, № 53, ст. 5185);

подпункт "а" пункта 32 изменений, которые вносятся в постановления Правительства Российской Федерации в связи с совершенствованием государственного управления, утвержденных постановлением Правительства Российской Федерации от 30 декабря 2004 г. № 865 "Об изменении и признании утратившими силу некоторых постановлений Правительства Российской Федерации в связи с совершенствованием государственного управления" (Собрание законодательства Российской Федерации, 2006, № 1, ст. 297).

2. Настоящее постановление вступает в силу с 1 сентября 2017 г.

Председатель Правительства
Российской Федерации Д.Медведев

1. To declare to be no longer in force: paragraph 2 of clause 1 of the Russian Federation Government Decree of December 25, 2001 No. 892 "Concerning Implementation of the Federal Law "On Prevention of Tuberculosis Distribution in the Russian Federation" (Collected Legislation of the Russian Federation, 2001, No. 53, p. 5185)";

See The procedure and terms of preventive medical examinations of population, aimed at TB detection, approved by the Order of the Ministry of Health of the Russian Federation of March 21, 2017 No. 124н See. sanitary and epidemiological rules SP 3.1.1295-03 "Prevention of tuberculosis" approved by the Chief Sanitary Officer of the Russian Federation on April 18, 2003.

1. This Procedure and terms specify the main requirements to preventive medical examinations of citizens of the Russian Federation, foreign citizens and persons without citizenship (hereinafter – population), aimed at detection of tuberculosis.

Results of TB infection screening in children and adolescents

Screening of children and adolescents using the recombinant tuberculosis allergen in 65 territories of the Russian Federation (2010-2012)

	Year			Total abs (%)
	2010 abs (%)	2011 abs (%)	2012 abs (%)	
Tested	449,353	868,606	950,235	2,262,194
Positive reactions ATR	48,735 (10.8)	122,758 (14.1)	129,012 (13.6)	300,505 (13.3)
Patients Detected	1033 (0.2)	1598 (0.2)	2109 (0.2)	4740 (0.2)

Results of the test with recombinant tuberculosis allergen in the groups under follow-up in tuberculosis dispensaries

Follow-up groups		Year		
		2010 abs (%)	2011 abs (%)	2012 abs (%)
I	Under follow-up in tuberculosis dispensary since	1983	2766	2882
	Tested	1460 (73.6)	2444 (88.4)	2754 (95.6)
	Positive reactions	1344 (92.1)	2201 (90.1)	2555 (92.8)
II	Under follow-up in tuberculosis dispensary since	399	912	1262
	Tested	339 (85.0)	885 (97.0)	1241 (98.3)
	Positive reactions	201 (59.3)	549 (62.0)	834 (67.2)
III	Under follow-up in tuberculosis dispensary since	169,031	214,219	211,879
	Tested	87,375 (51.7)	180,100 (84.1)	188,504 (89.0)
	Positive reactions	24,282 (27.8)	48,253 (26.8)	54,742 (29.0)

First conclusions:

1. Positive and doubtful ATR reactions are observed 18 times less often, as compared with tuberculin.

2. Higher efficacy of TB detection was observed, as compared with conventional screening.

3. Positive ATR reactions in patients of general hospitals were observed more than twice as frequently, as compared with children and adolescents attending schools and secondary educational institutions.

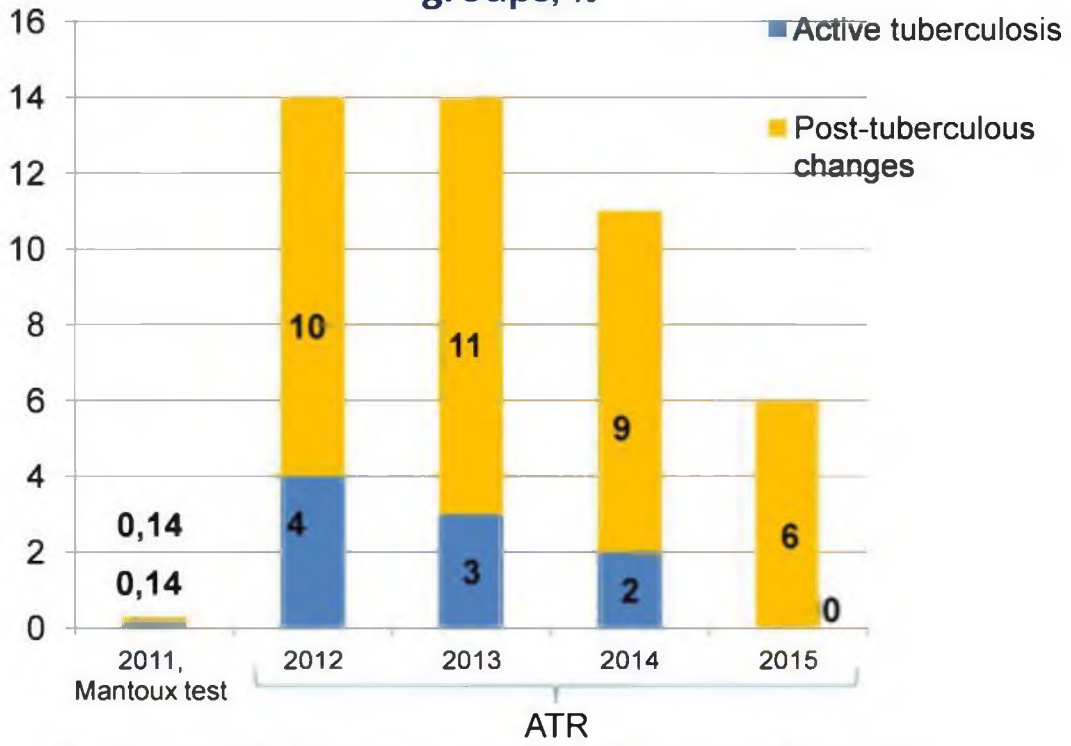
V.A. Aksenova et al., 2011

2017 – long-term outcomes of the use of recombinant tuberculosis allergen for TB infection screening using ATR (ESAT6/CFP10)

Regions	Stavropol Territory
Children and adolescents	– children from 8 to 17 years, – attending schools of the city of Stavropol.
n	97,634
Design	full-design study – children and adolescents were examined using ATR, – the results were compared with previously obtained results of Mantoux test.

V.A. Aksenova, N.N. Moiseeva et al., 2017.

The proportion of persons with a specific abnormality in risk groups, %

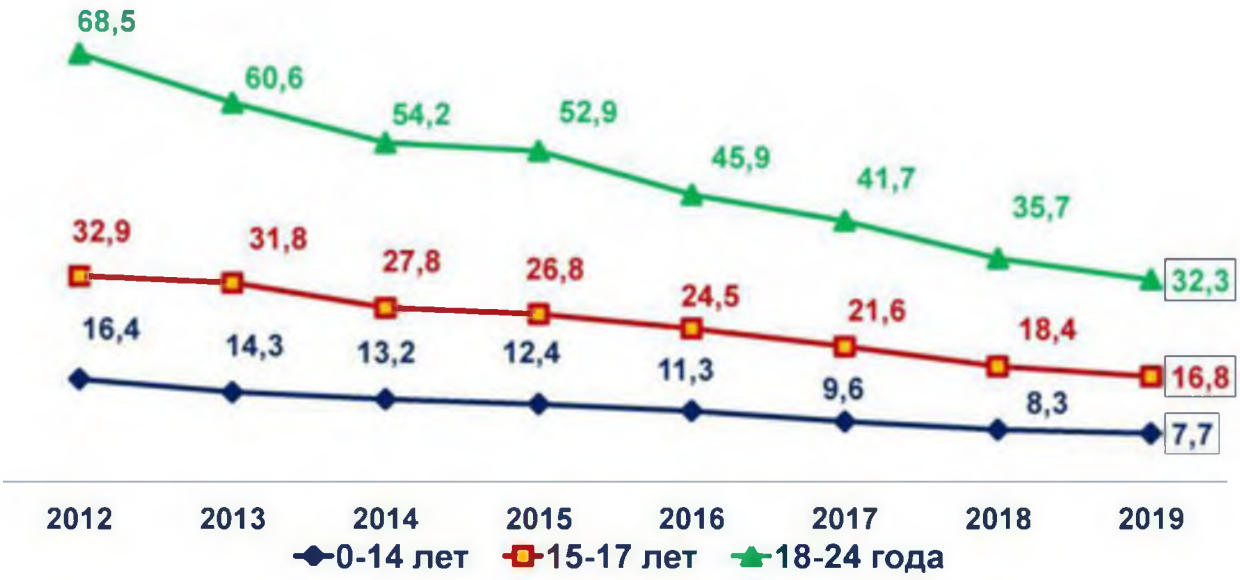


*a clear trend to decrease in proportion of a specific abnormality identified using ATR test, p = 0.0216.

V.A. Aksenova, N.N. Moiseeva et al., 2017.

Incidence of tuberculosis in Russia

Per 100 000 of the corresponding population



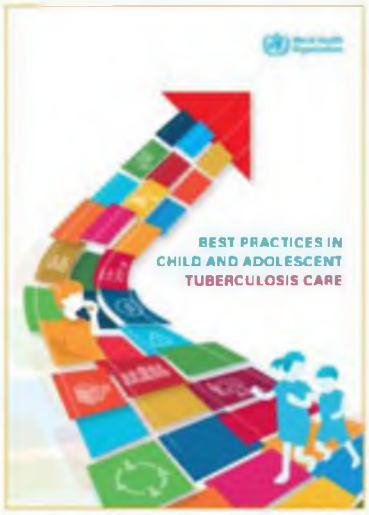
Conclusions:

1. The transition to screening with recombinant tuberculosis allergen in children above 8 years ensured improvement of early TB diagnostics quality.

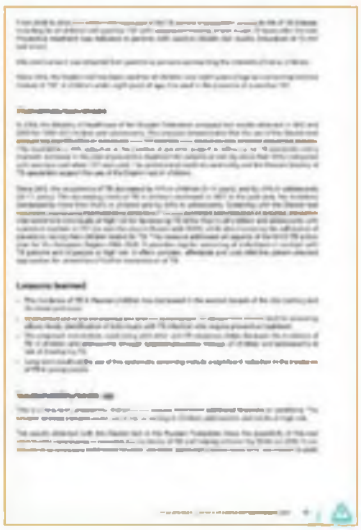
2. No cases of missed local TB forms in evaluation of long-term outcomes of the use of ATR for TB screening upon reaching adolescence were observed during photofluorographic examinations.

3. The number of children aged 8–17 years put under dispensary observation in the TB risk group decreases in case of transition to screening using ATR.

V.A. Aksenova, N.N. Moiseeva et al., 2017.



Best practices in child and adolescent Tuberculosis care 2016-2020 rr.



Conclusion

1. Application of a new skin test with recombinant tuberculosis allergen in TB infection screening ensured significant (four-fold) increase in quality of early diagnostics of a specific abnormality, as compared with tuberculin diagnostics.

2. Implementation of a new skin test ensured identification of children and adolescents with post-tuberculous changes, previously missed during tuberculin diagnostics.

3. Application of a skin test with ATR in TB infection screening ensured significant decrease in the number of patients requiring a referral to a TB specialist and increase in feasibility of follow-up examination and preventive treatment.

4. Timely treatment and prevention as per results of screening with ATR during several years ensured decrease in TB morbidity rate in children and adolescents.

Child
& Adolescent
TB Working Group

Члены рабочей группы по делам детей и подростков в мировом сообществе

Annual meeting of the Child and Adolescent TB working group
Wednesday 24 October 2018, The Hague, The Netherlands

Russia: M.D, PhD, Anastasia Samoylova, First Deputy Director of the National Medical Research Centre of Phthisiopulmonology and Infectious Diseases.

Federal State Budgetary Institution "National Medical Research Center of Phthisiopulmonology and Infectious Diseases" of the Ministry of Health of the Russian Federation

Russian experience TB treatment: multisectoral approaches

M.D, PhD, Anastasia Samoilova, First Deputy Director

Russian Federation

Tuberculosis treatment success rate in the Russian Federation and Global

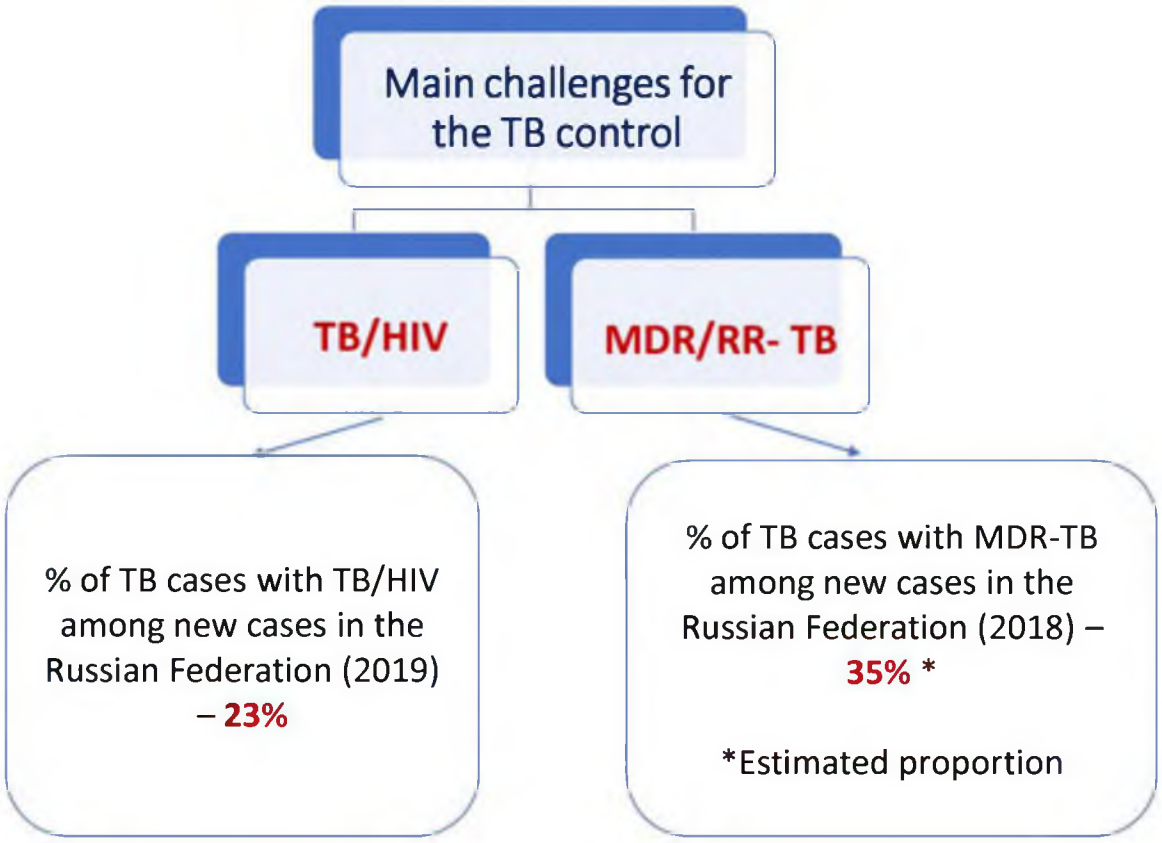
Treatment success rate	Global	Russian Federation
New and relapse cases registered in (2018)	85%	69%
HIV-positive TB cases (2018)	76%	44%
MDR-TB cases (2017)	57%	55%

Global indicators of the effective TB treatment

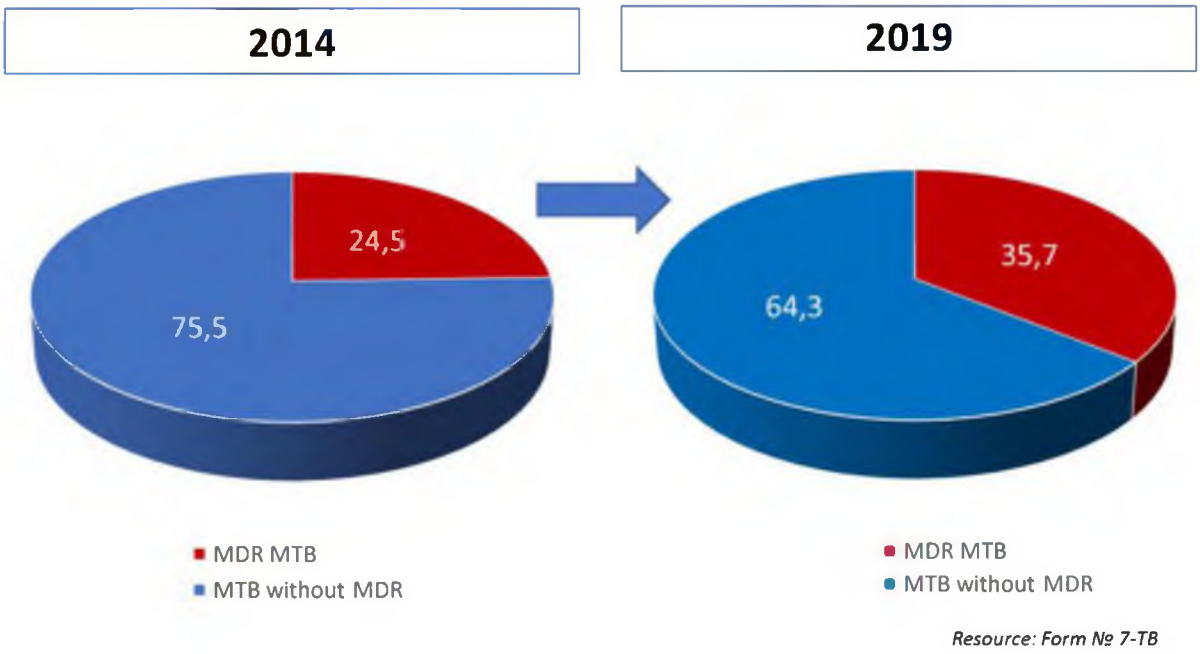
- Treatment success rate – not less than **85%***
- Treatment success rate MDR-TB – **75%****

**Roadmap to prevent and combat drug-resistant tuberculosis. The Consolidated Action Plan to Prevent and Combat Multidrug- and Extensively Drug-Resistant Tuberculosis in the WHO European Region 2011–2015. WHO, 2011*

*** Global strategy and targets for tuberculosis prevention, care and control after 2015. WHO, 2013*



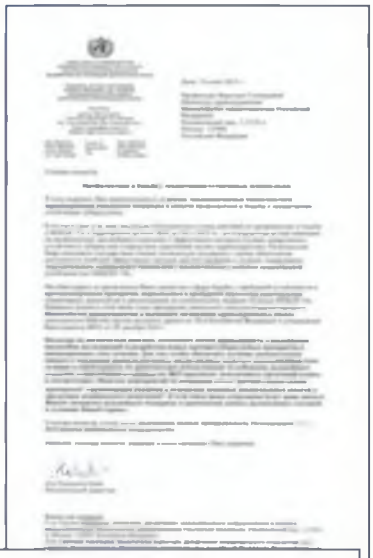
MDR-TB cases rate among new cases in the Russian Federation (2014, 2019)



Resource: Form № 7-TB

Tuberculosis treatment in the Russian Federation

- **Complex treatment**
- **Personalized approach** to the treatment regimens composition in accordance with *Mycobacterium tuberculosis* drug-resistance type
- Treatment regimens which include **new drugs**

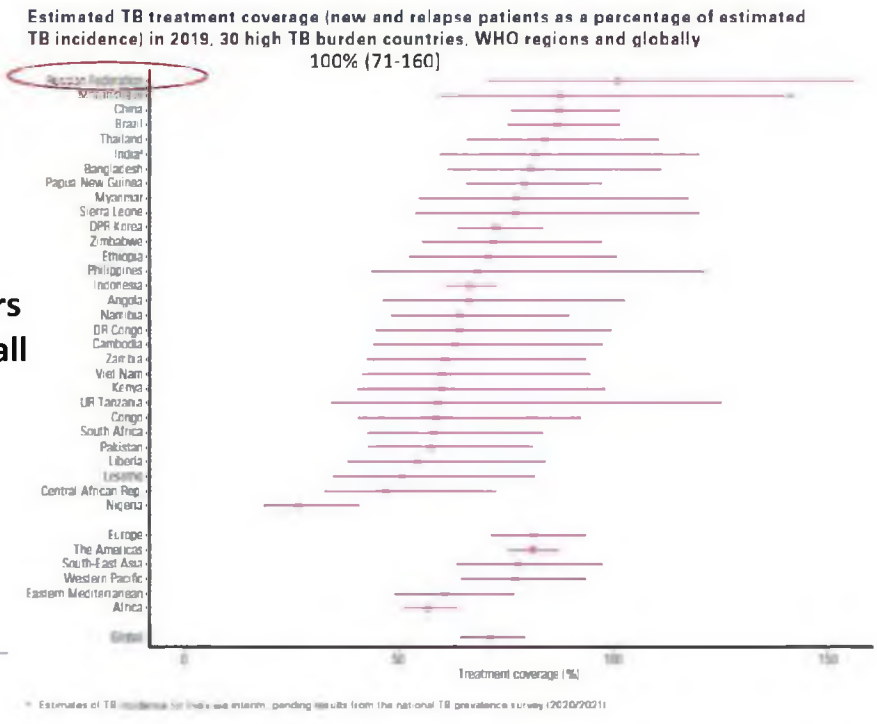


Мы благодарны за проявленное Вами лидерство в сфере борьбы с проблемой устойчивости к противомикробным препаратам, выразившееся в проведении пересмотра национальных нормативных документов и рекомендаций по клиническому ведению больных М/ШЛУ-ТБ. Важными вехами в этой связи стали проведение уникального консультативного процесса Министерства здравоохранения и Всемирной организации здравоохранения в рамках деятельности Рабочей группы высокого уровня по ТБ в Российской Федерации и утверждение Вами приказа №951 от 29 декабря 2014 г.

LETTER from Zsuzsanna YAKAB, WHO Regional Director for Europe, to the Minister of health of the Russian Federation, V. I. SKVORTSOVA, dated 15 June 2015

Notifications of new and relapse cases TB treatment coverage (notified/estimated incidence), 2019

Case notification numbers (new and relapse cases, all forms) (black) compared with **estimated TB incidence numbers (green)** 2000–2019

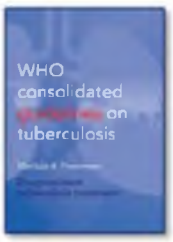


Clinical guidelines:

Рубрикатор
клинических рекомендаций

- ***Developed in accordance with existing regulatory documents and available on the website***
  http://cr.rosminzdrav.ru

Tuberculosis treatment



Medicines recommended for inclusion to MDR-TB treatment regimens		
Priority medicines	levofloxacin moxifloxacin OR sparfloxacin	Lfx Mfx Sfx
	bedaquiline	Bq
	inezolid	Lzd
	cycloserine OR terizidone	Cs Trd
Additional medicines	ethambutol pyrazinamide amikacin capreomycin kanamycin imipenem–cilastatin meropenem prothionamide/ethionamide p-aminosalicylic acid	E Z Am Cm Km Imp Mp Pto/Eto PAS

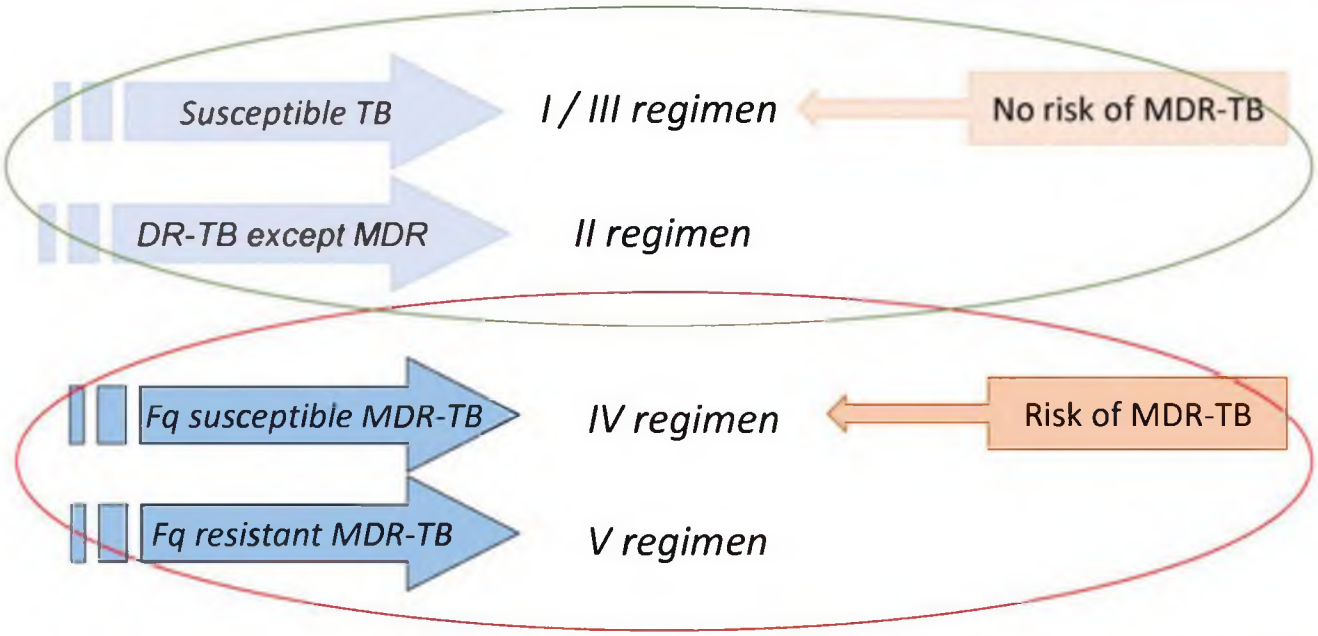
Table 3.1. Grouping of medicines recommended for use in longer MDR-TB regimens[1]

Groups and steps	Medicine	Abbreviation
Group A Include all three medicines	Levofloxacin or moxifloxacin	Lfx Mfx
	Bedaquiline[2]	Bdq
	Linezolid[3]	Lzd
Group B Add one or both medicines	Clofazimine	Cfz
	Cycloserine or terizidone	Cs Trd
Group C Add to complete the regimen and when medicines from Groups A and B cannot be used	Ethambutol	E
	Delamanid[4]	Dlm
	Pyrazinamide[5]	Z
	Imipenem–cilastatin or meropenem[6]	Ipm–Cln Mpm
	Amikacin (or streptomycin)[7]	Am (S)
	Ethionamide or prothionamide	Eto Pto
	P-aminosalicylic acid	PAS

Delamanid
Registered in Russia 08.05.2020

TB treatment regimens

The basis for choosing – DST results

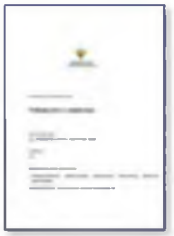


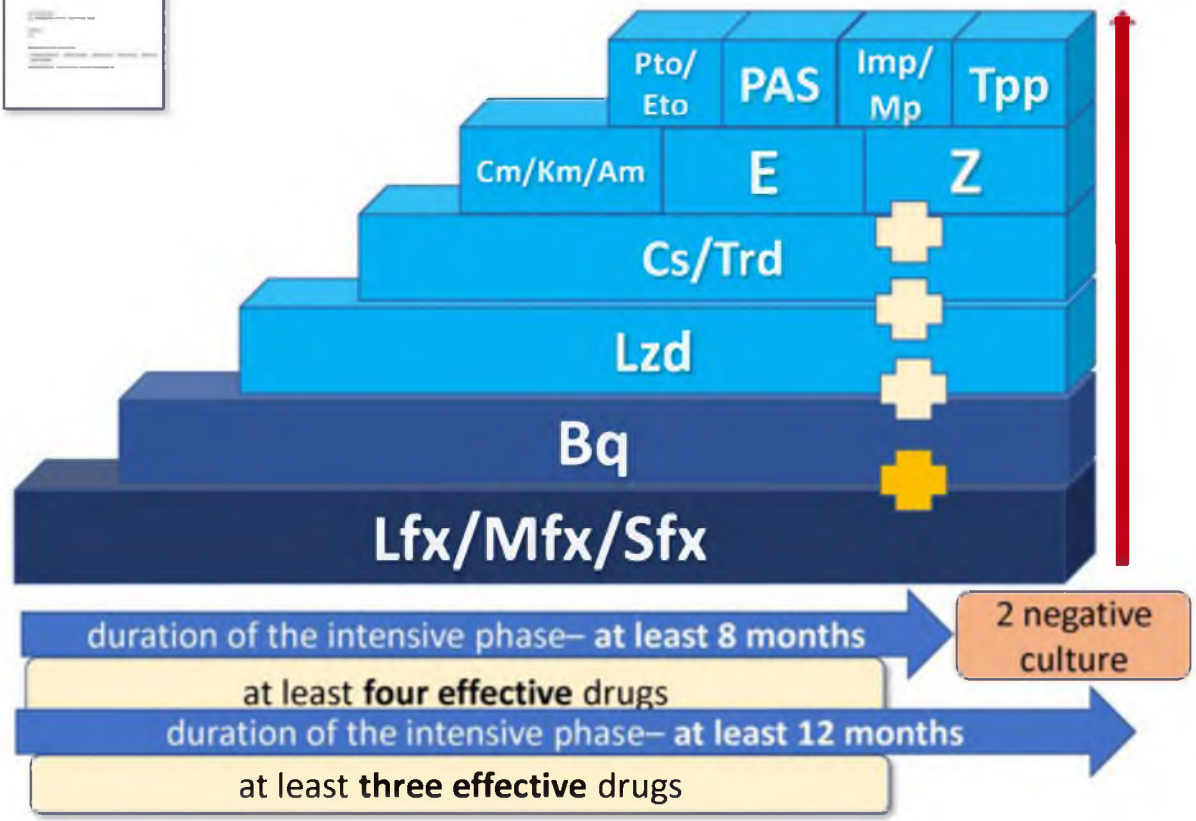
Regimens with no DST data should not be the rule, only the exception

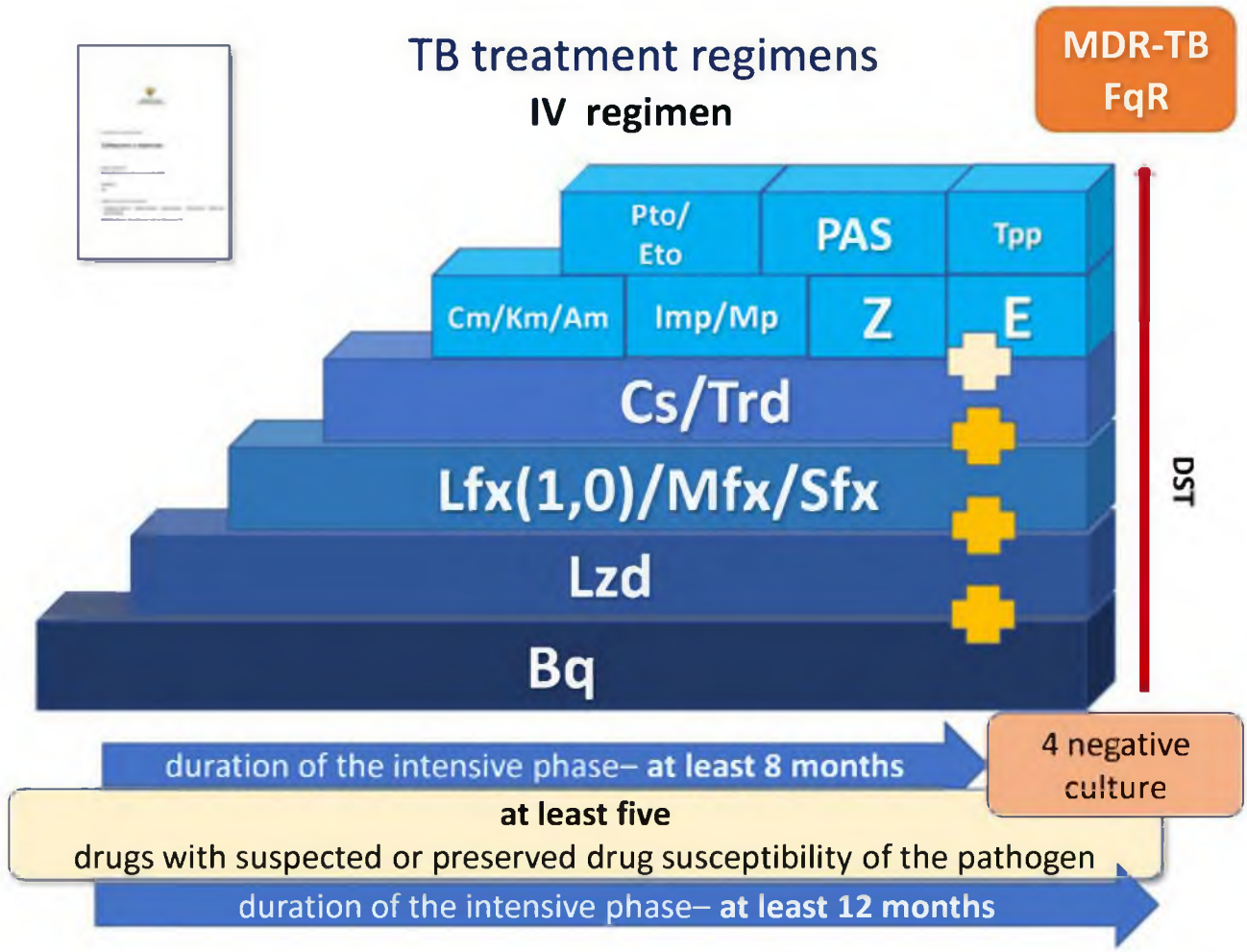
TB treatment regimens

IV regimen

MDR-TB FqS

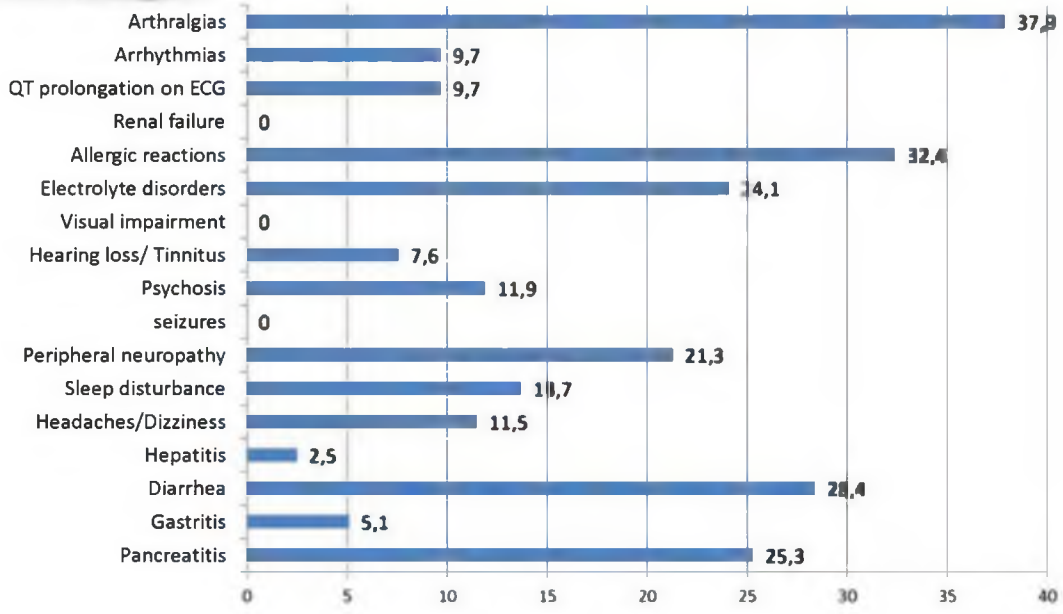






Adverse events of tuberculosis treatment with M/XDR-TB pathogen

(% of those taken for treatment)



I. Vasilyeva, A. Samoilova, 2017

Increasing TB patients treatment adherence

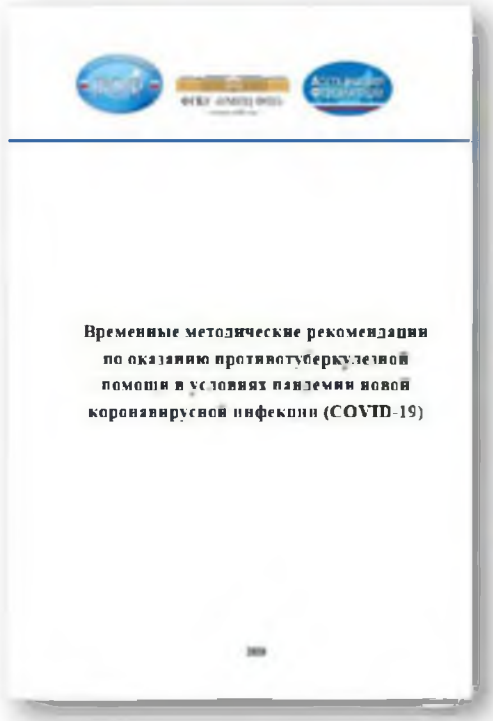
- Social support programs for tuberculosis patients with MDR pathogen in all regions of the Russian Federation
- Support of TB patients upon release from the penitentiary system
- Hospital replacement technologies (home hospital, day hospital, video-observed therapy)

Treatment without control reduces effectiveness **by 14%**

Treatment with periodic monitoring of drugs intake **– by 9%**

Toczek A.*Strategies for reducing treatment default in drug-resistant tuberculosis: systematic review and meta-analysis.* *Int J Tuberc Lung Dis.* 2013 Mar;17(3):299-307. doi: 10.5588/ijtld.12.0537. Epub 2012 Dec 4.

Temporary guidelines for providing TB care in the context of a new coronavirus pandemic



Approved by:

Presidium of the Russian society of phthisiologists 28.04.2020

Presidium Of the Association of phthisiologists 28.04.2020

- Effective TB treatment
- Measures to combat TB/ HIV co-infection
- Measures to increase adherence to TB treatment

WHO: ***Dr. Avinash Kanchar "TB prevention"***

TB prevention Global policies

International Conference of Experts from Russia and ASEAN Member States

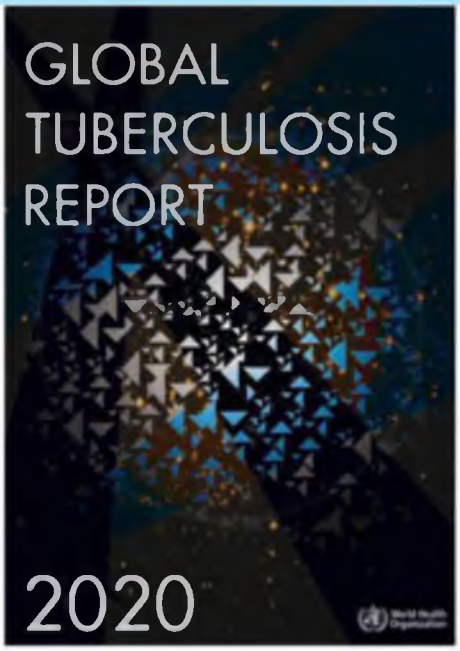
16-11-2021

Dr.Avinash Kanchar
WHO Global TB Programme

World Health Organization

END TB

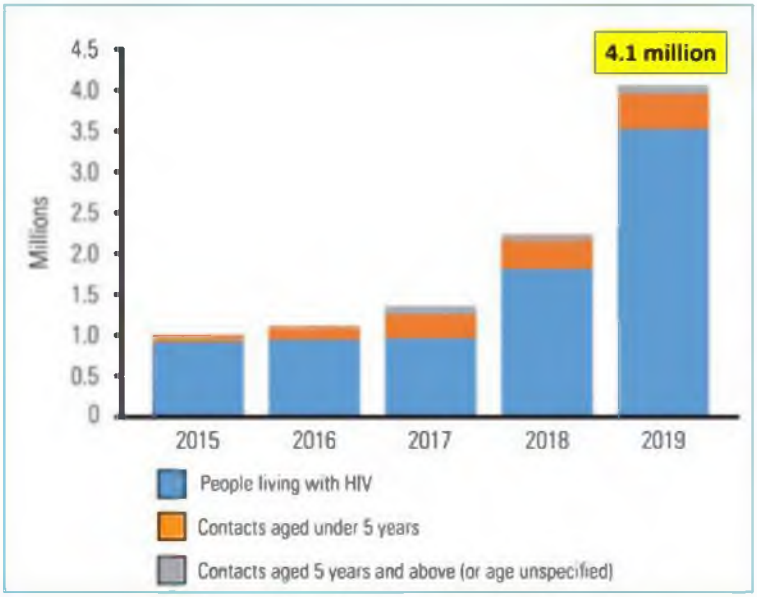
Global Progress: Global TB Report, 2020



Mobile app in English, French, Russian
Apple App store:
Google Play store:

World Health Organization

Number of people provided TPT globally yearly (2015–2019)



World Health Organization

WHO guidance

Evolution of WHO guidelines for TPT

2020 2018

- Fragmentation
- Difficult adaptation for programmes
- Limited options for high TB burden settings

World Health Organization

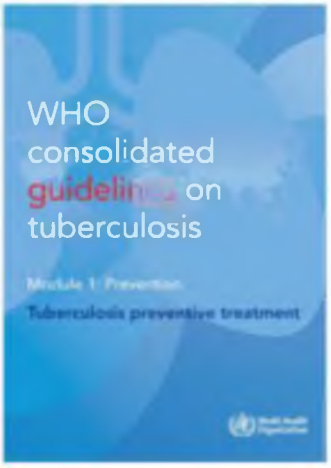
2020 TPT guidelines

18 recommendations on **4 critical steps** of the TB preventive care pathway:

- Identify people at risk
- Rule out TB disease
- Test for TB infection
- TPT options

(Research gaps)

2020

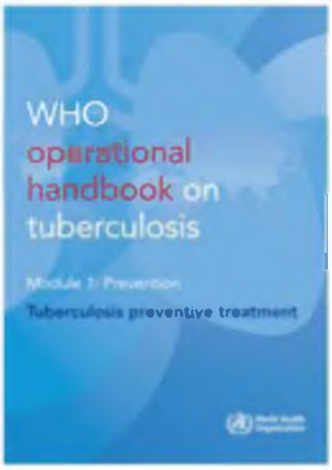


World Health Organization

2020 TPT operational handbook

- Provides **complementary details** on TPT critical to the implementation of different elements of PMTPT e.g. contact tracing, drug dosages, safety monitoring, programme indicators
- Collates evidence to address **FAQs**

2020



World Health Organization

2020 TPT guidelines

GUIDELINES

link

https://www.who.int/publications-detail/who-consolidated-guidelines-on-tuberculosis-module-1-prevention-tuberculosis-preventive-treatment

The 18 recommendations on TPT in the 2020 update cover critical steps in programmatic management that follow the cascade of preventive care. Key changes include

- updated TPT options for people of all ages and HIV status, including a new regimen of 1-month daily rifapentine and isoniazid;
- commentary on how different regimens can be used in different TB burden settings with due attention to the exclusion of active TB, confirmation of infection, protection from re-infection and prevention of health inequities;
- conclusions, from the latest evidence, that pregnancy does not disqualify women living with HIV from receiving TPT and that a systematic deferral of isoniazid preventive treatment till after delivery would deprive them of significant protection when they are highly vulnerable to TB. A need for more research in this area is underlined;
- a single algorithm harmonizing key decision points on testing for TB infection, screening, chest radiography and TPT in the main populations at risk;

Operational limitations that need to be overcome by countries to achieve global targets are highlighted and discussed in greater detail in the **operational handbook** of TPT that is being released concurrently.

HANDBOOK

link

https://www.who.int/publications-detail/who-operational-handbook-on-tuberculosis-module-1-prevention-tuberculosis-preventive-treatment

Identify people at risk

2020 TPT guidelines – *Identify people at risk*

People living with HIV

- Adults and adolescents (>10y) [**regardless of ARV, pregnancy, previous TB treatment, immunosuppression and availability of test for TB infection**]*
- Infants aged < 12 months who are in **contact with TB***
- Children aged ≥ 12 months once TB disease is ruled out
- **All children who successfully completed treatment for TB disease**

World Health Organization

* Strong recommendation

2020 TPT guidelines – *Identify people at risk*

Household contacts of pulmonary TB (bacteriologically confirmed)

- Children < 5 years*
- Individuals aged ≥ 5 years
- Exposed to multidrug-resistant tuberculosis

World Health Organization

* Strong recommendation

TB risk among Household contacts of TB patients

Pooled estimates of risk *by **age-group** and **baseline infection status**, compared with the **general population***

Age (years)	LTBI-positive at baseline				Regardless of baseline LTBI status			
	Follow-up < 12 months		Follow-up < 24 months		Follow-up < 12 months		Follow-up < 24 months	
	No. of studies	Risk ratio	No. of studies	Risk ratio	No. of studies	Risk ratio	No. of studies	Risk ratio
General population	–	1.0 (reference)	–	1.0 (reference)	–	1.0 (reference)	–	1.0 (reference)
0–4	2	24.3 (0.73–811.0)	3	22.9 (7.7–68.6)	3	25.9 (16.9–39.7)	5	14.8 (9.8–22.3)
5–14	2	27.1 (17.5–54.1)	3	8.2 (2.3–29.4)	3	24.1 (16.9–34.4)	5	6.3 (2.9–13.7)
≥ 15	1	30.7 (17.5–54.1)	2	13.4 (9.5–18.8)	1	24.7 (14.2–43.0)	3	11.7 (7.6–18.0)

World Health Organization

2020 TPT guidelines – *Identify people at risk*

Other risk indicating systematic testing & TPT

- People initiating **anti-TNF treatment**, on **dialysis**, or preparing for an organ or haematological **transplant**, or who have **silicosis***
- **Prisoners, health workers, immigrants** from countries with a high TB burden, **homeless** people and **people who use drugs**
- **No systematic testing & treatment** in: diabetes, harmful use of alcohol, tobacco smoking, underweight

World Health Organization

* Strong recommendation

Recommended target populations for TPT

Priority target populations	Other target populations	No systematic TPT
1. **PLHIV** 2. Adults, adolescents and children who are ***household contacts*** of people with bacteriologically confirmed pulmonary TB cases 3. Clinical indications • Silicosis • Anti-TNF treatment • Dialysis • Transplantation	1. Prisoners 2. Health care workers 3. Immigrants from countries with a high TB burden 4. Homeless people 5. People who use illicit drugs	• **Diabetics** • People with harmful **alcohol** use • tobacco **smokers** and • **underweight**

World Health Organization

Rule out TB disease

Recommendation to rule-out TB disease

	Symptom screening	Chest radiography
PLHIV	no current cough, fever, weight loss or night sweats	Chest X ray may be used in TB screening- **PLHIV on ART/contacts +5** The absence of clinical signs and chest X ray abnormalities may be used to rule out TB before starting TPT
Infants and children living with HIV	**poor weight gain**, fever or current cough or who have a **history of TB contact** should be evaluated for TB	
Contacts 5+ and other at risk groups	no current cough, fever, weight loss or night sweats	

World Health Organization

PLHIV on ART

Chest radiography may be offered to PLHIV on ART and TPT given to those with no abnormal radiographic findings

Subgroup	Type of screening	No. of studies	Pooled sensitivity (%) (95% CI)	Pooled specificity (%) (95% CI)	Negative predictive value for TB prevalence (%)			
					1	5	10	20
On ART	Symptom screening alone	7	51.0 (28.4;73.2)	70.7 (47.8;86.4)	99.3	96.5	92.8	85.2
	Symptom screening plus abnormal chest radiography	2	84.6 (69.7;92.9)	29.8 (26.3;33.6)	99.5	97.4	94.6	88.6
Not on ART	Symptom screening alone	15	89.3 (82.6;93.6)	27.2 (17.3;40.0)	99.6	98.0	95.8	91.1
	Symptom screening plus abnormal chest radiography	5	94.3 (76.2;98.8)	20.1 (7.6;43.8)	99.7	98.5	97.0	93.4
Pregnant women	Symptom screening alone	4	27.1 (16.3;41.7)	82.4 (79.1;85.2)	99.1	95.6	91.1	81.9
Children	Symptom screening alone	1	100 (76.8;100)	4.3 (1.8;8.7)	100	100	100	100

World Health Organization

Chest radiography should not be considered barrier for initiating preventive treatment

HIV negative contacts aged ≥ 5 years

- ❑ Absence of **any** TB symptom
- ❑ Absence of any chest radiography abnormality

Performance of screening tools in a hypothetical population of 10 000 HIV-negative individuals at 2% TB prevalence

Algorithm	No. of studies	Sensitivity	Specificity	False negative at screening	Negative predictive value after negative screening	False positive at screening
Chest radiography: any abnormality	7	0.941	0.868	12	0.999	1294
Chest radiography: abnormality suggestive of TB	6	0.893	0.922	21	0.998	764
Any cough	10	0.627	0.775	75	0.990	2205
Cough ≥ 2-3 weeks	6	0.382	0.943	124	0.987	559
Any TB symptom	11	0.730	0.766	54	0.993	2303
Any TB symptom plus any chest radiography abnormality	*	1.00	0.701	0	1	2930

* No data could be obtained directly from the studies included in the systematic review, thus, the estimates were inferred from five studies of both chest radiography and symptom screening.

World Health Organization

Test for TB infection

2020 TPT guidelines – *Test for TB infection*

- **Either** a TST or IGRA (QuantiFERON®-TB Gold and T-SPOT®.TB) can be used to test for TB infection
- A test for TB infection is **not a requirement** for initiating TPT in **PLHIV or individuals aged < 5 years** in contact with people with active TB

World Health Organization

TPT options

2020 TPT guidelines – *TPT options*

- 6 or 9 months of **daily isoniazid***
- 3 month regimen of **weekly rifapentine** plus isoniazid*
- 3 month regimen of **daily isoniazid plus rifampicin***
- **1 month regimen of daily isoniazid plus rifapentine** (>13 Y)
- **4 months of daily rifampicin alone**
- 36 months of daily isoniazid preventive treatment in PLHIV >10y in settings with high TB transmission

World Health Organization

* Strong recommendation

TPT in children

Children <2 years*	Preferred regimen: **3RH** If paediatric **FDC not available**: 6H
Children <25kg (8-10 years)	Preferred regimen: **3RH** If paediatric FDC not available: 6H or 3HP
Children with HIV	**3HP** for **older children** not on **protease inhibitors or nevirapine** (and able to swallow tablets) or **6H** (preferably using dispersible tabs)
Older children (over 25kg)	**3RH** using **adult FDC** or **3HP** using adult formulations

World Health Organization

* Strong recommendation

Use of rifapentine in TPT regimens as of June 2020

World Health Organization

Rifapentine registered in

1. China
2. Hong Kong SAR
3. DR Congo
4. Ghana
5. India
6. Indonesia
7. Mongolia
8. Myanmar
9. Philippines
10. Singapore
11. South Africa
12. Thailand
13. Turkmenistan
14. Uganda
15. **USA**

Several countries used **local waiver mechanisms** to get rifapentine when not registered

TPT among contacts of MDR-TB patients

Approximately 90% reduction in MDR-TB incidence with TPT among contacts

Considerations

- **intensity** of exposure
- drug **resistance pattern of source** patient (i.e. MDR-TB confirmed bacteriologically and **susceptibility to a fluoroquinolone** established)
- Ascertain TB infection using **IGRA or TST**

Regimen used in studies reviewed by GDG

- **levofloxacin daily for 6 months with ethambutol or ethionamide**
- **4R** in H mono-resistance
- **6H/9H**- if isoniazid susceptibility is confirmed in index patients

Clinical follow-up two years for signs and symptoms of TB

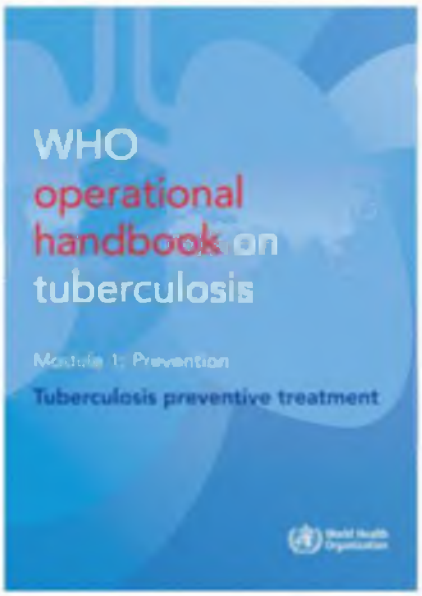
World Health Organization

Ongoing trials –TPT for contacts of DR-TB patients

	TB CHAMP	V-QUIN	PHOENIx
Intervention	**6 month levofloxacin (Lfx)** vs placebo in infants and children ***exposed to MDR-TB***	**24 weeks of Lfx** vs placebo in all ages with ***evidence of infection***	**26 weeks of delamanid** vs isoniazid
Age group	<5 years	All	All
Countries	South Africa	Viet Nam	11 countries
Time line for Results	**End 2021**	**End 2022**	**Mid-2025**
Reference	http://www.isrctn.com/ISRCTN92634082	https://anzctr.org.au/Trial/Registration/TrialReview.aspx?id=369817&isReview=true	https://clinicaltrials.gov/ct2/show/NCT03568383

World Health Organization

TPT operational handbook



World Health Organization

TPT for special populations -pregnancy

Systematic review for the 2020 WHO guidelines showed

- **No association of IPT with adverse pregnancy outcomes** (foetal/neonatal death, prematurity, LBW, congenital anomaly) across different studies
- **No increase in risks for maternal hepatotoxicity,** grade 3 or 4 events or death
- **deferral** of TPT to postpartum period **not required**

- Pregnancy does not disqualify women living with HIV
- TPT can be started either antenatal and postnatal periods with due clinical care
- **Routine LFT not indicated** unless there are other hazards
- **4R, 3HP, triple pill combination of 6(H+ Cotrimoxazole+ B6)** may be preferred TPT options
- **Vitamin B6 supplementation** should be given routinely to pregnant and breastfeeding women on TPT

World Health Organization

Co-administration of 3HP and Dolutegravir

- DOLPHIN trial (**Dol**utegravir Rifa**p**entine Isoniazid **In**vestigation) reported no serious adverse events

- Although co-administration caused reduced DTG blood levels, this was clinically not significant and did not require DTG dose adjustment.

World Health Organization

http://www.croiwebcasts.org/console/player/41177?mediaType=audio&

Repeat or restart TPT

- No evidence to date on the utility of repeated courses of TPT
- In high TB transmission settings, WHO recommends **36 H** (proxy for life long) for PLHIV

WHIP3TB trial among PLHIV on ART (2019), compared effectiveness of 3HP given once (N=1802) or twice within 14 months (N=1808) **Vs** one course of 6H (N=404).

- Treatment completion was better with 3HP
- 24 months follow-up showed **similar rates** of incidence of TB, rifampicin resistant TB and mortality between those receiving **3HP once or twice**

A **repeat course** of TPT should be considered among HIV+ or HIV- persons who previously completed a course of TPT following **close contact of a TB patient**

World Health Organization

Operational also handbook collates evidence on FAQs

Adverse events

- Tiny **proportion** of people on TPT develop adverse events
- most are **self-limiting and reversible**
- shorter **rifamycin-based regimens** have better profile

Efficacy

- Current TPT ranges provide **risk reduction of 60-90%** between those who get TPT versus those who do not
- **TPT saves lives**: PLHIV (TEMPRANO trial) receiving IPT had a **37% lower in mortality**
- Protection last between **6 to 19 years** with IPT

Risk of Drug resistance

No evidence to date showing increased resistance due to PMTPT

World Health Organization

Current opportunities for TPT scale up

1. Recent **high-level political commitments**
2. Recently **revised guidance**
3. Availability of rifamycin based **shorter treatment**
4. Various **donor initiatives** to support scale-up
5. Ongoing **Global Fund** grant development
6. Support from **technical** partners

Acknowledgements

TB & HIV programmes

Dennis Falzon

Matteo Zignol

Annabel Baddeley

Guideline Development Groups

TAG, patients

USAID

Other experts, donors

World Health Organization

Thank You

- Russia: **M.D, PhD,** ***Oksana Komissarova "Central Tuberculosis Research Institute Peculiarities of Approaches to Complex Treatment of Patients with Pulmonary Tuberculosis with Co-existing Diabetes"***

Peculiarities of Approaches to Complex Treatment of Patients with Pulmonary Tuberculosis with Co- existing Diabetes

Prof. Komissarova O.

ЦНИИТ Central TB Research Institute, Moscow, Russian Federation

Tuberculosis risk factors

N	RISK FACTOR	RELATIVE RISK (UNC	ATTRIBUTABLE TB CASES (MILLIONS)
1	Undernourishment	3,2	2,2
2	HIV	18	0,76
3	Smoking	1,6	0,70
4	Diabetes mellitus	1,5	0,35
5	Harmful use of alcohol	3,3	0,72

Global tuberculosis report 2019. Geneva: World Health Organization; 2019.

ЦНИИТ Central TB Research Institute, Moscow, Russian Federation

Diabetes mellitus - tuberculosis risk factor

The deferred immune response to MTB due to the deposition of the final glycation products on the surface of macrophage membranes;

Late MTB replication management;

Higher bacterial load on the lungs;

More cytokines and immune pathology;

More severe forms of tuberculosis with bacterial excretion.

MDR tuberculosis and diabetes mellitus

Tuberculosis 2019

In the world:

Resistance to R - in 465 000 patients

(of these, 78% were diagnosed with MDR, the rest - PP-TB)

XDR MBT - 6.0% among MDR patients

MDR TB In the Russian Federation :

2015 – in 37357

2016 – in 37925

2017 - in 36286

2018 - in 34578

2019 – in 31390 patients.

Global Tuberculosis Report 2019. WHO/CDS/TB/2019.15

Nechayeva O. 2018г. http://www.mednet.ru/ru/czentr-monitoringa-tuberkulyoza.html

Diabetes mellitus 2019

In the world there were 463 million patients with diabetes

In the Russian Federation: 2018

The total number of patients with diabetes was 4,584,575 (3.1% of the population of the Russian Federation), of which:

Type 1 diabetes - 6.0% (256 202),

Type 2 diabetes - 92.0% (4 238 503),

Other types of diabetes - 2.0%

IDF Diabetes Atlas - 9th Edition 2019

Diabetes mellitus,.2019;22(S1). DOI: 10.14341/DM22151

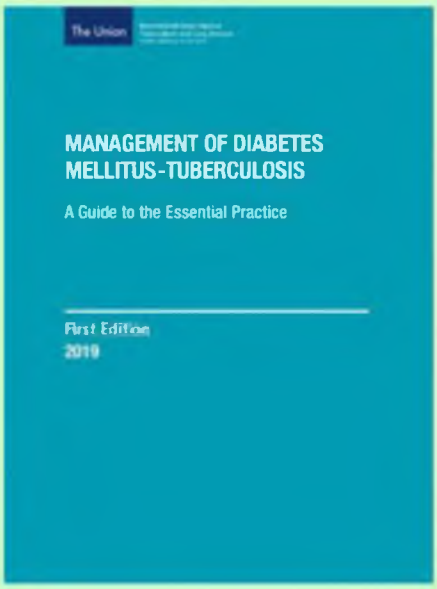
Tuberculosis and diabetes mellitus

Bali Declaration on the Looming TB-Diabetes Co-Epidemic

In Bali (Indonesia), on November 2-3, 2015, the first International Summit on TB and diabetes was held.

Bali's declaration on taking effective measures to combat the impending co-epidemic - tuberculosis-diabetes.

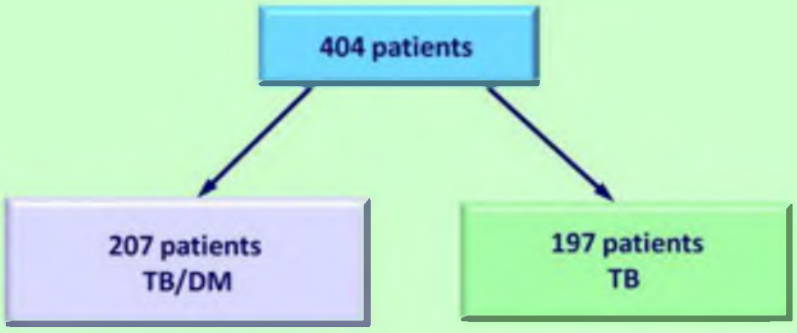
http://www.worlddiabetesfoundation.org/news/bali-declaration-calls-action-against-tb-diabetes-co-epidemic



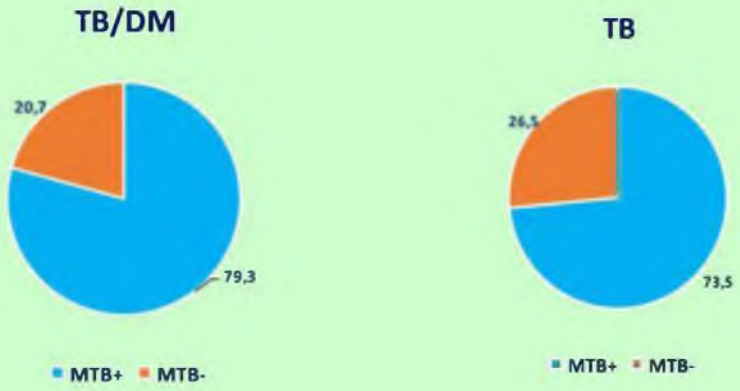
Aim

Study of the frequency and types of complications of diabetes mellitus and adverse reactions to anti-TB drugs in patients with tuberculosis combined diabetes mellitus and tuberculosis without diabetes.

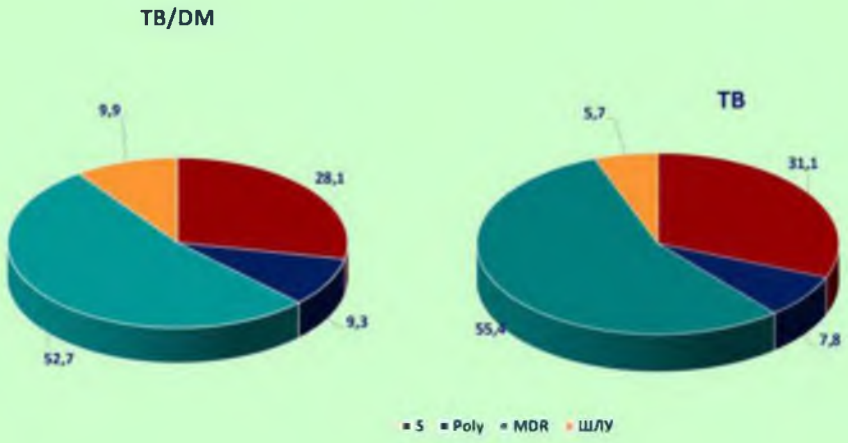
Study design



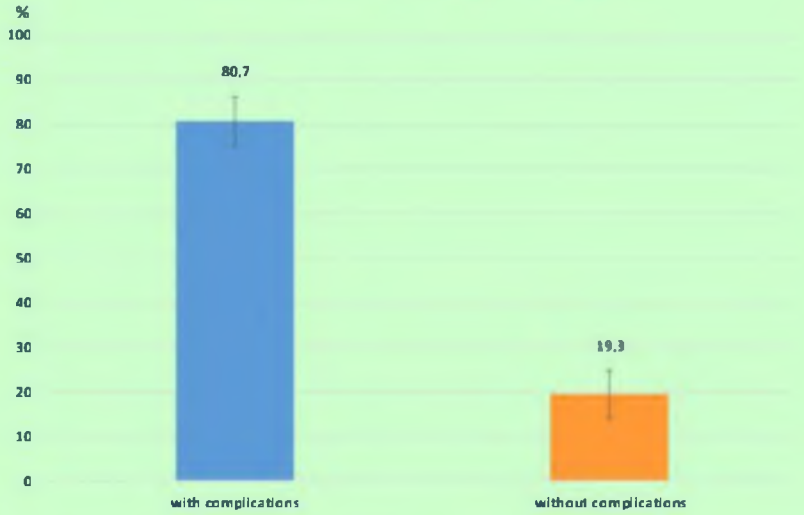
The frequency of positive MTB sputum culture in patients with tuberculosis combined diabetes mellitus and without diabetes



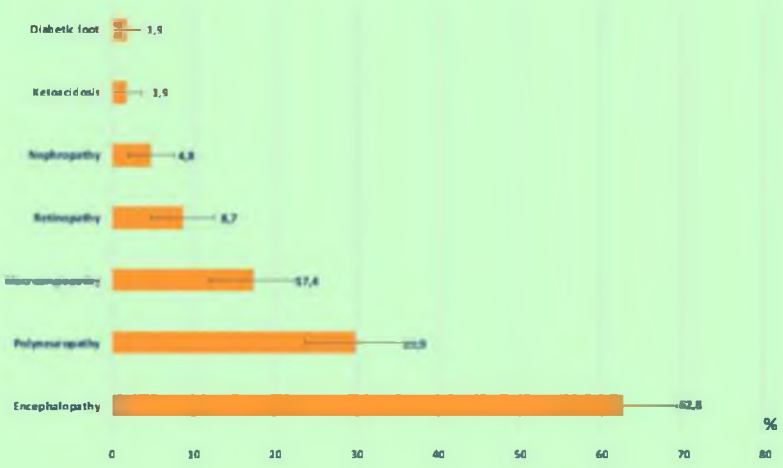
Spectrum of drug resistance of the MTB to anti-tuberculosis drugs



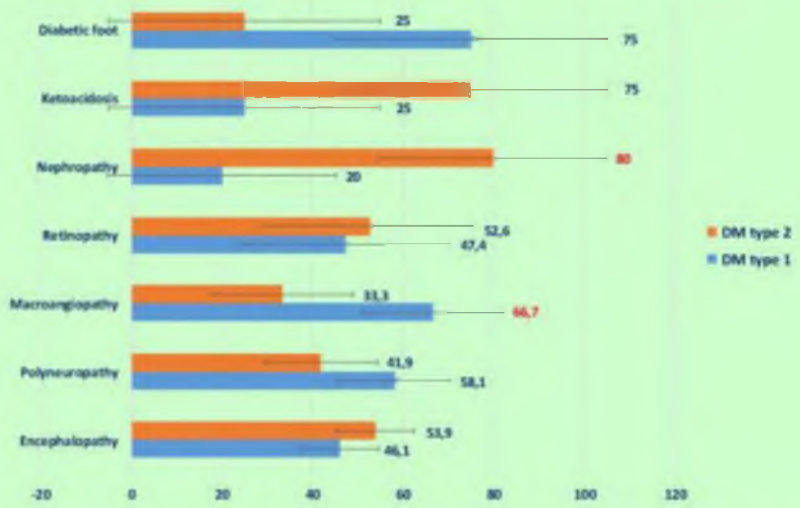
The frequency of complications of diabetes in patients with pulmonary tuberculosis



Types of complications of diabetes in patients with pulmonary tuberculosis



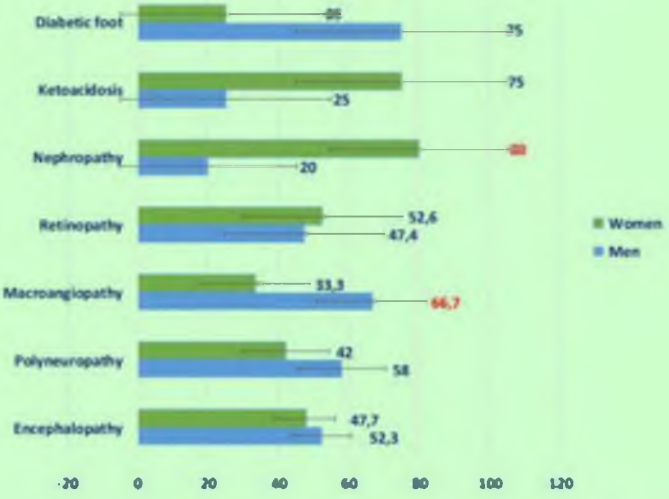
Types of complications of diabetes in patients with pulmonary tuberculosis



ЦНИИТ

Central TB Research Institute, Moscow, Russian Federation

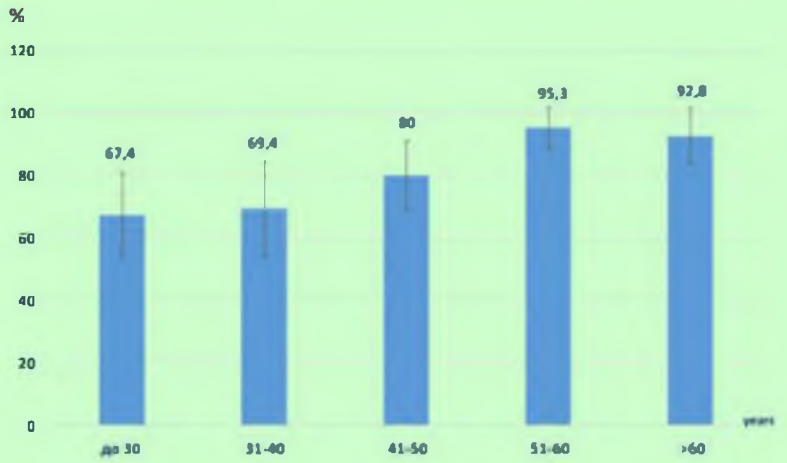
Types of complications of diabetes in men and women with pulmonary tuberculosis



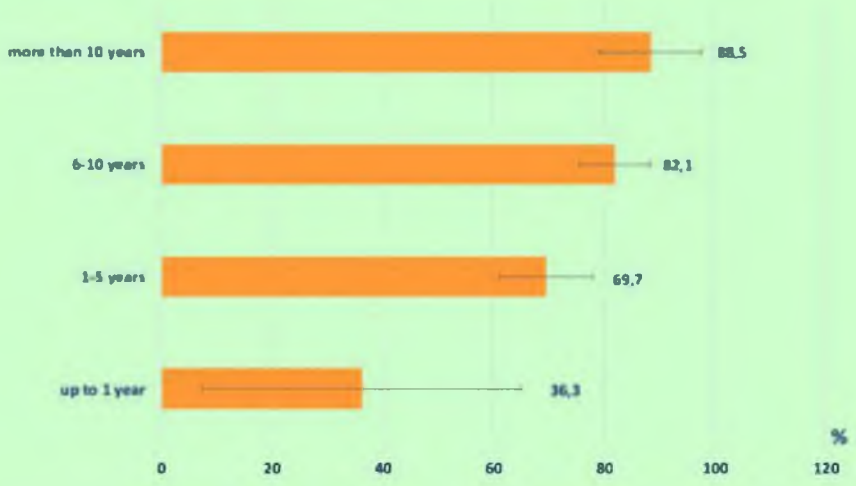
ЦНИИТ

Central TB Research Institute, Moscow, Russian Federation

The frequency of complications of diabetes mellitus depending on the age of patients with pulmonary tuberculosis.



The frequency of complications of diabetes in patients with pulmonary tuberculosis depending on the duration of diabetes.

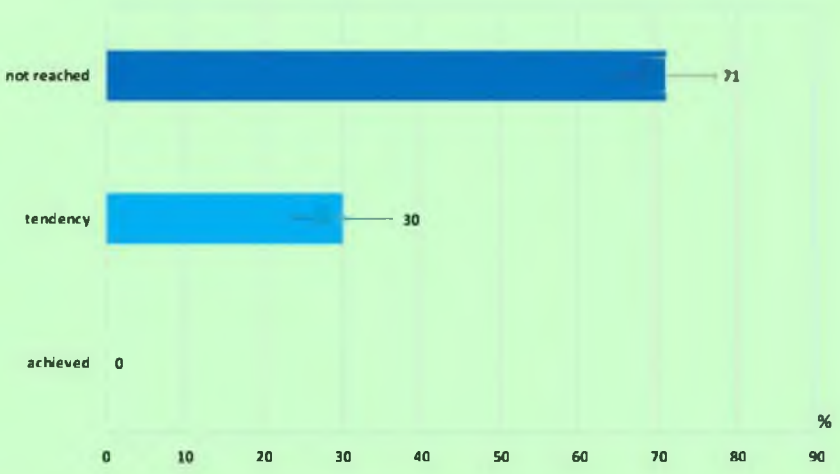


Comprehensive treatment of patients with pulmonary tuberculosis combined diabetes mellitus

The treatment of patients with tuberculosis and diabetes is a complex task and requires great joint efforts of a TB specialist and an endocrinologist.

Successful treatment of tuberculosis in patients with diabetes is possible only if target levels of glucose and glycated hemoglbin are reached.

Achieving targets for carbohydrate metabolism before starting treatment for tuberculosis



ЦНИИТ Central TB Research Institute, Moscow, Russian Federation

Comprehensive treatment of patients with pulmonary tuberculosis combined diabetes mellitus

1. Insulin therapy (regardless of type of diabetes).

Tuberculosis inflammation reduces the sensitivity of body tissues to insulin.

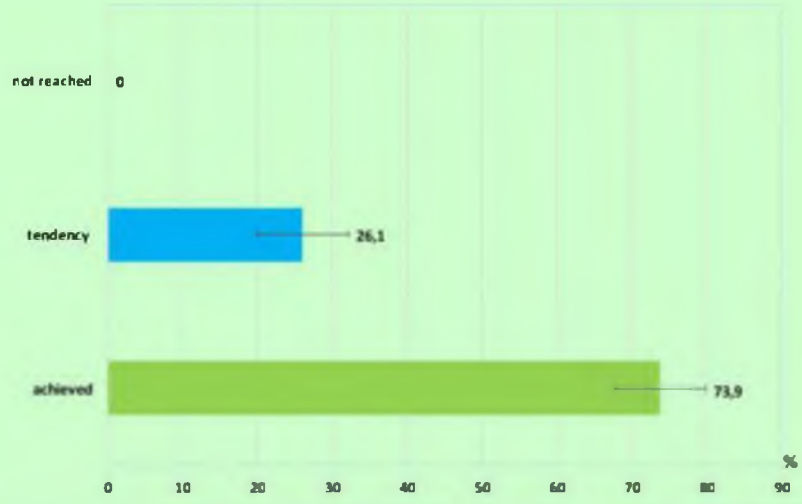
Some anti-TB drugs have multidirectional effects on antidiabetic drugs.

Comprehensive treatment of patients with pulmonary tuberculosis combined diabetes mellitus

The need for sugar-lowering drugs is changing.

!!! It is necessary to prescribe insulin therapy upon admission of the patient to the hospital in order to clearly correct the level of glycemia.

Achieving target glucose and glycated hemoglobin levels after 1-2 months of treatment



Comprehensive treatment of patients with pulmonary tuberculosis combined diabetes mellitus

2. Chemotherapy.

The presence of various complications of diabetes in this patients makes chemotherapy difficult.

To prevent adverse events, the dose of antituberculosis drugs must be selected depending on the severity of diabetic complications (retinopathy, neuropathy, nephropathy, etc.)

Chemotherapy

Chemotherapy was carried out in accordance with the sensitivity of the MTB to anti-TB drugs and individual tolerance.

With drug sensitivity of the MTB:

Intensive phase –3 H, R, Z, E (Amk) Cm

Amk- is prescribed for contraindication of the use of E (consultation of an ophthalmologist)

Continuation phase -4 H, R, Z.

Chemotherapy

With MDR MTB:

Intensive phase - Z, Lfx (Mfx), Cm (Km / Amk), Tzd, Pt (PAS) - 8 months.

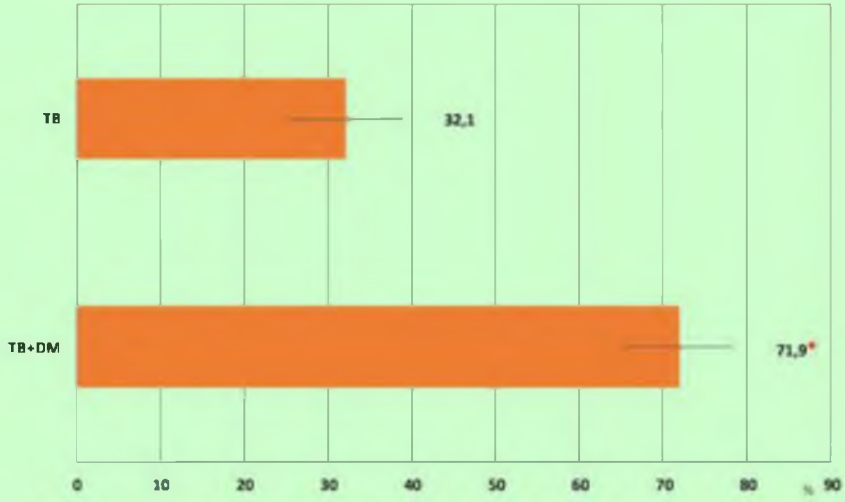
Continuation phase - Z, Lfx (Mfx), Tzd, Pt, (PAS) - 12-18 months

With XDR MTB:

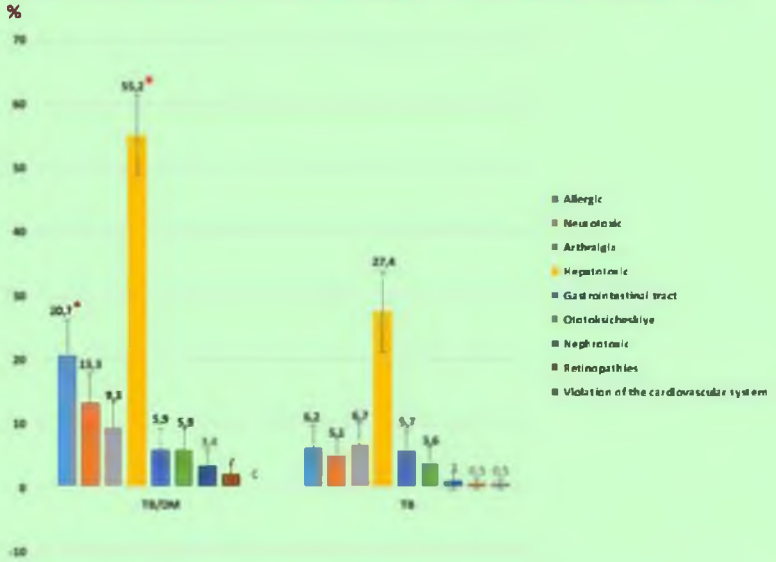
Intensive phase - Z, Mfx (Lfx), Cm, Tzd, PAS, Lzd, Bq *, (Clr, Amx) - 8 months.

Continuation phase - Z, Mfx (Lfx), Tzd, PAS (Lzd, Clr, Amx) - 12-18 months

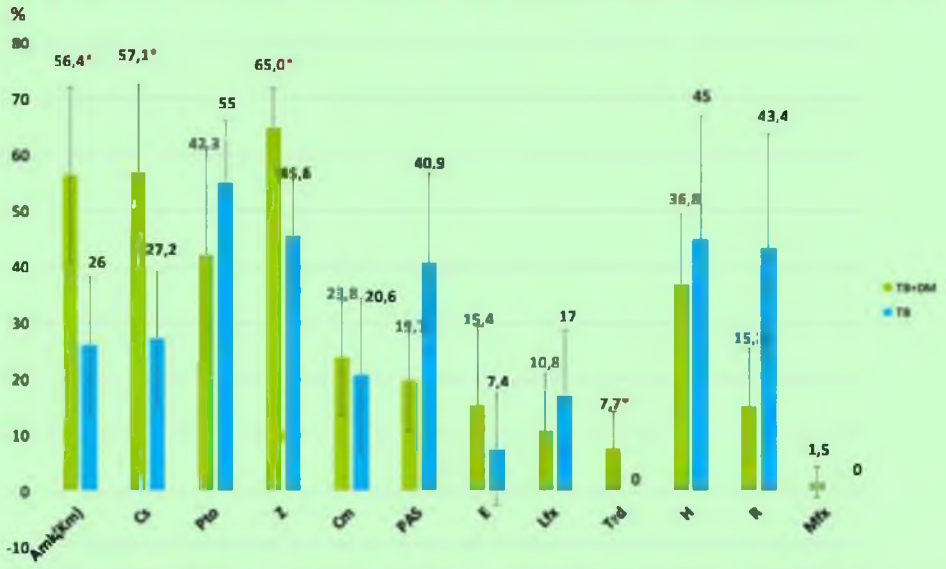
The frequency of adverse reactions to anti-TB drugs in patients with TB combined diabetes mellitus and TB



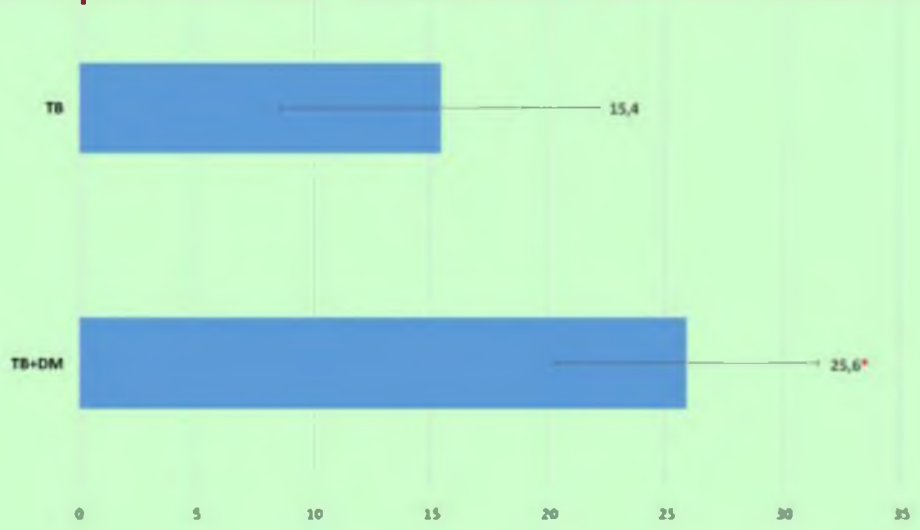
Types of adverse reactions to anti-TB drugs in patients with TB combined diabetes mellitus and TB



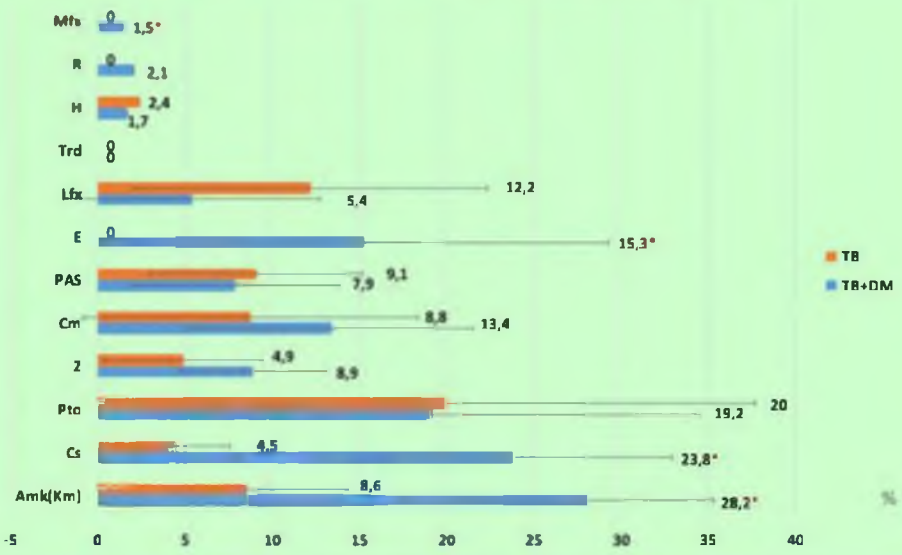
The frequency of adverse reactions to individual antituberculosis drugs in patients with TB combined diabetes mellitus and TB



The frequency of withdrawal of anti-TB drugs due to adverse reactions in patients with TB combined diabetes mellitus and TB



The frequency of withdrawal of individual anti-TB drugs in patients with TB combined diabetes mellitus and TB



The timing of the occurrence of of adverse reactions to anti-TB drugs in patients with TB combined diabetes mellitus and TB

Comprehensive treatment of patients with pulmonary tuberculosis combined diabetes mellitus

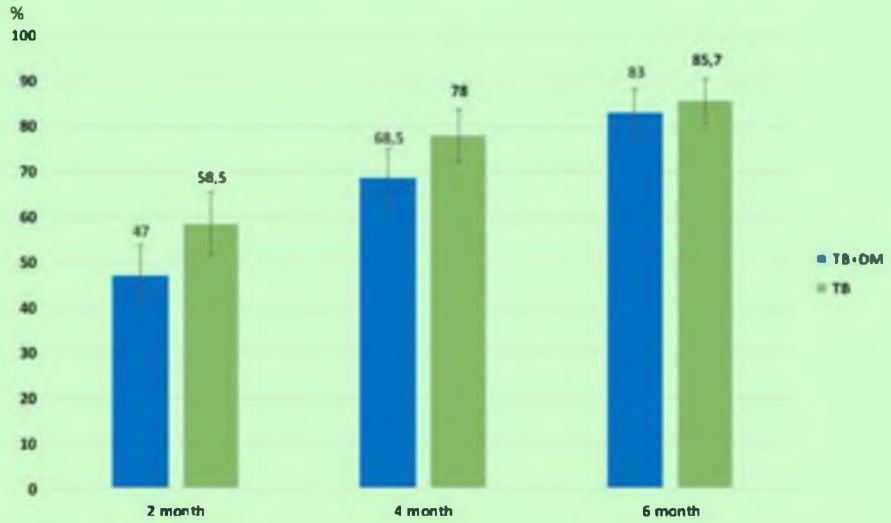
3. Pathogenetic treatments (plasmapheresis, vitamin therapy, hepatoprotectors, angioprotectors, neuroprotectors, probiotics).

4. Symptomatic treatment.

5. Collapsotherapy.

6. Surgical treatment as needed

The efficacy of treatment by the negativation of sputum culture



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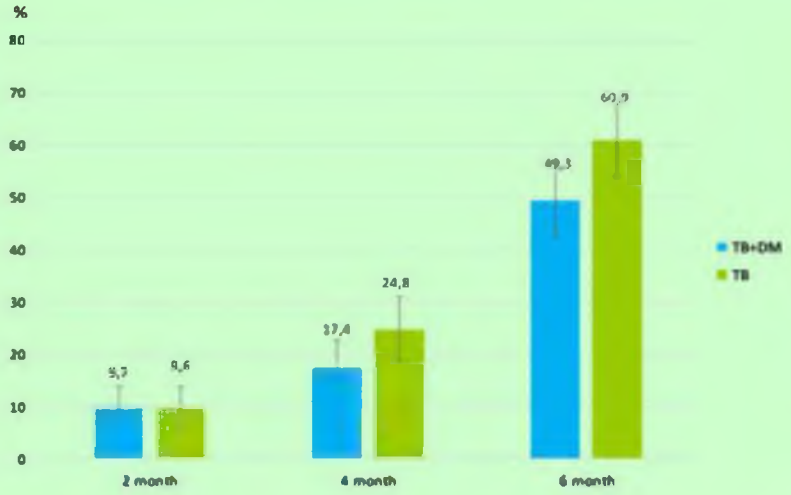
The efficacy of treatment by the close of cavities



Conclusion

Despite the presence of a greater number of complications and adverse reactions to anti-tuberculosis drugs an individual approach, regular monitoring and timely correction of adverse reactions, disorders of carbohydrate metabolism, as well as complications of diabetes mellitus allows for a full course of chemotherapy for pulmonary tuberculosis and to achieve results comparable to patients without diabetes.

Types of caverns in patients with tuberculosis combined diabetes mellitus.

Thanks for your attention!

Singapore: ***Deborah Ng Hee Ling, Jeffery Cutter «Diagnosis, treatment and prevention of TB in Singapore»***

National Centre for Infectious Diseases

Diagnosis, treatment and prevention of TB in Singapore

16 – 17 November 2020

Dr Deborah Ng, Deputy Director
A/Prof Jeffery Cutter, Director
National TB Programme, Singapore

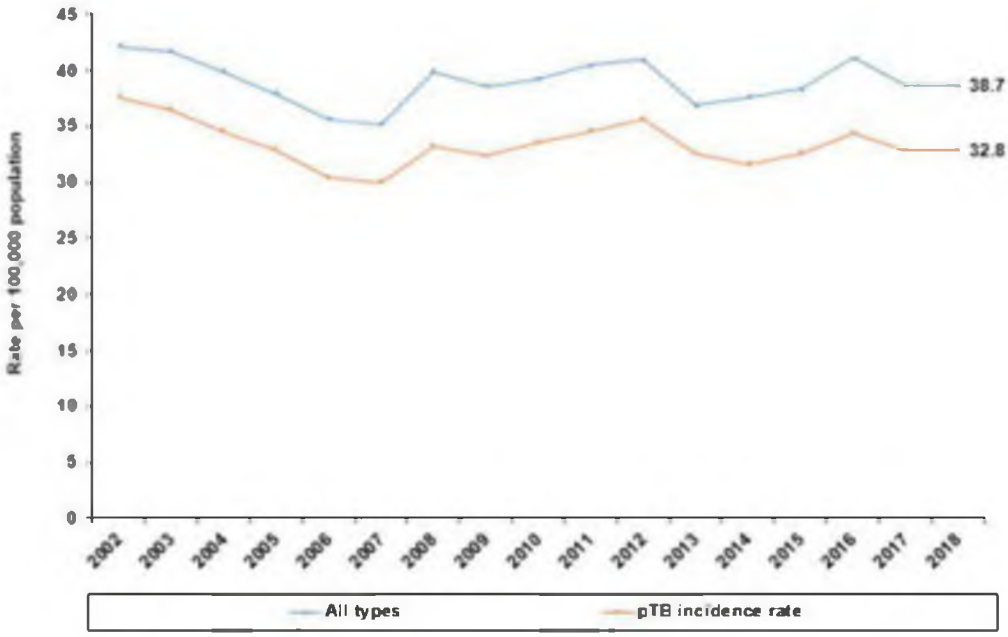
National Centre for Infectious Diseases

Summary

- Epidemiology of TB in Singapore
- Structure of the National TB Programme
- Detection and diagnosis of TB
- Treatment of TB
- Prevention of TB

INCIDENCE OF TB IN SINGAPORE

National Centre for Infectious Diseases



Source: MOH annual report

INCIDENCE OF TB IN SINGAPORE

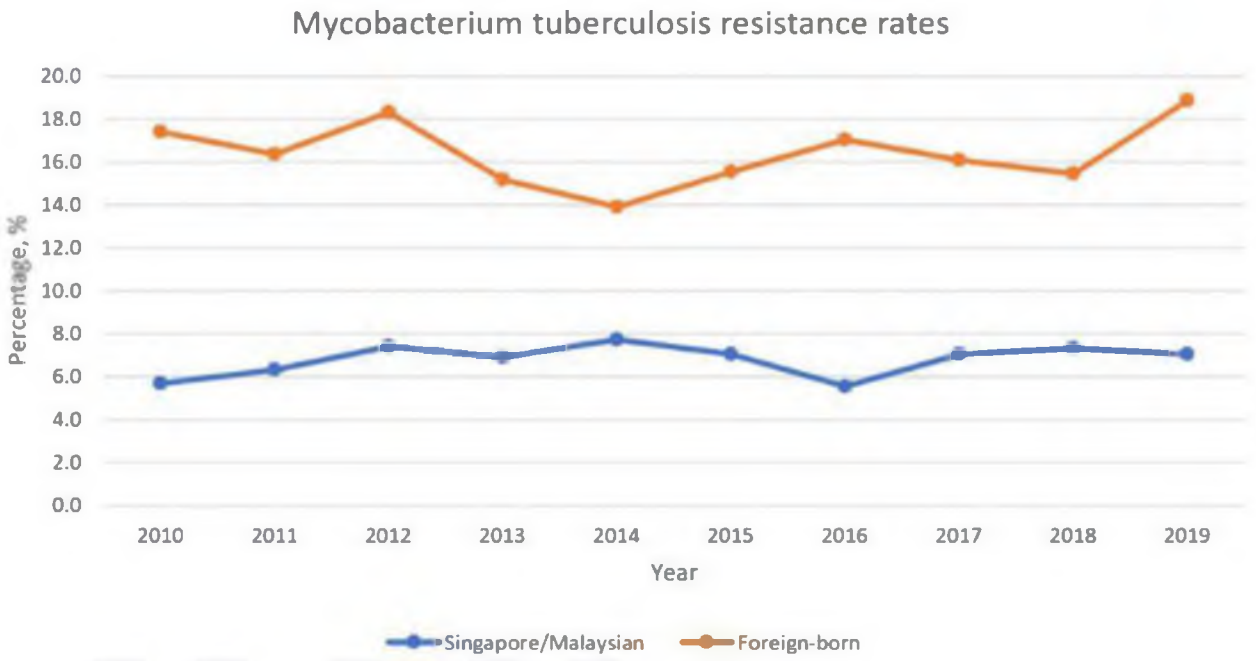
National Centre for Infectious Diseases

New TB cases by site of disease in Singapore residents and long-staying foreigners, 2009-2018

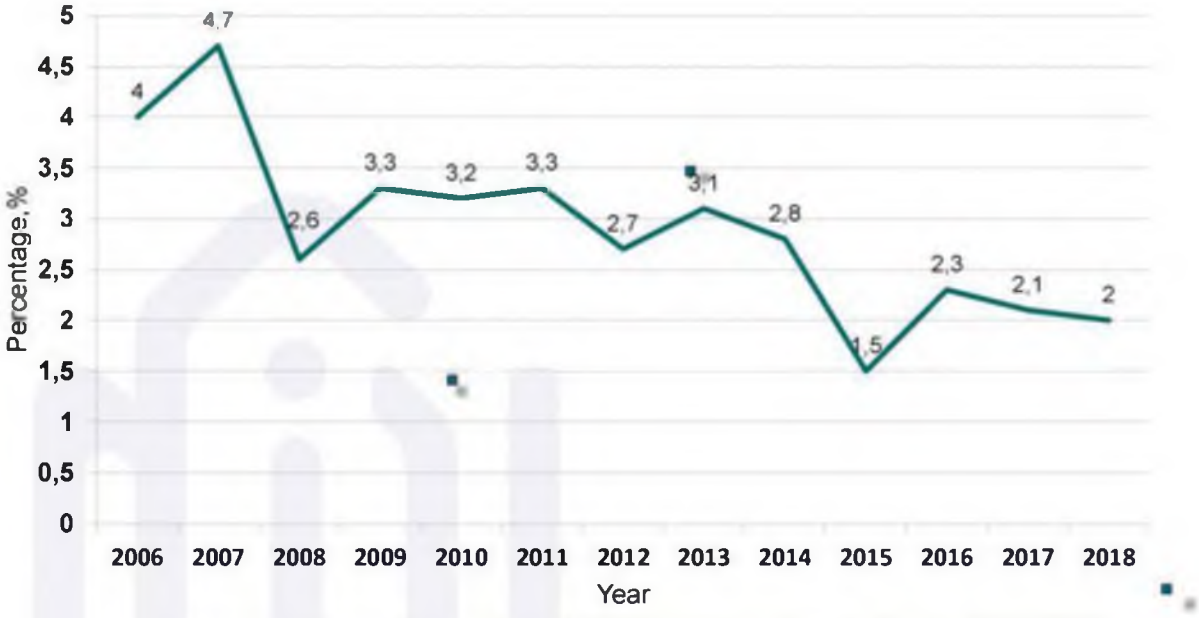
Year	New cases			Incidence rate per 100,000 population		
	Pulmonary[1]	Extra-pulmonary	Total	Pulmonary[1]	Extra-pulmonary	Total
2009	1,624	342	1,966	32.6	6.9	39.4
2010	1,727	301	2,028	34.0	5.9	39.9
2011	1,811	315	2,126	34.9	6.1	41.0
2012	1,897	306	2,203	35.7	5.8	41.5
2013	1,750	278	2,028	32.4	5.1	37.6
2014	1,705	313	2,018	31.2	5.7	36.9
2015	1,691	309	2,000	30.6	5.6	36.1
2016	1,930	380	2,310	34.4	6.8	41.2
2017	1,871	320	2,191	33.3	5.7	39.0
2018	1,858	324	2,182	33.0	5.7	38.7

[1] Pulmonary TB referred to TB of the lung parenchyma and included cases that had both pulmonary and extra-pulmonary TB.

TB RESISTANCE RATES

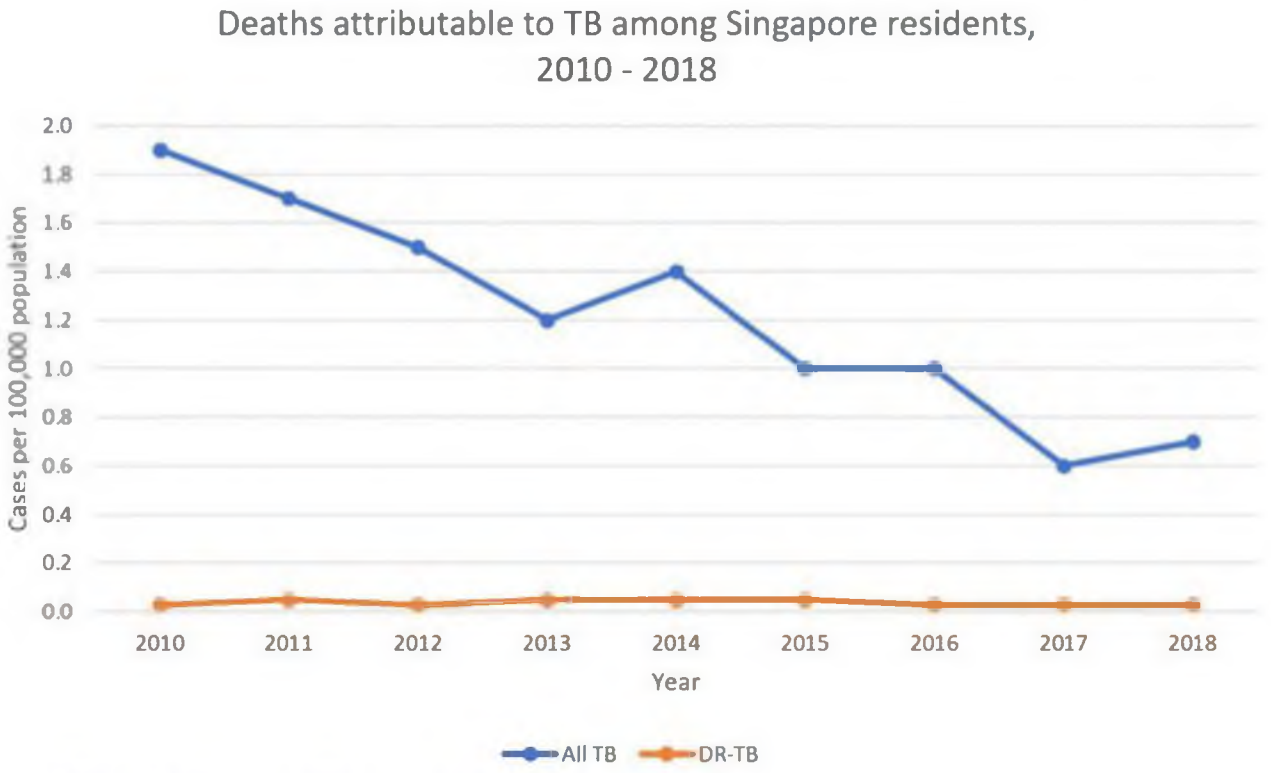


TB/ HIV CO-INFECTION RATES

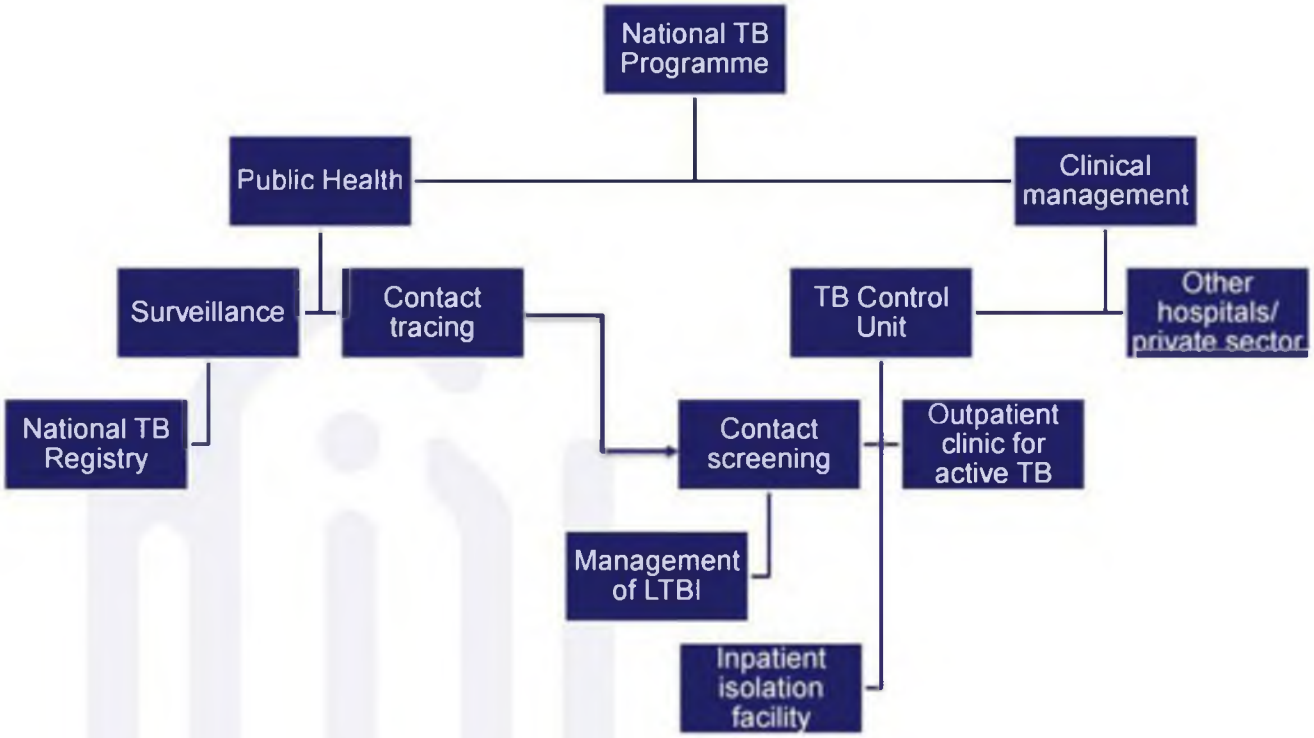


Percentage of new TB cases with HIV infection among residents, 2006-2018

TB MORTALITY



NATIONAL TUBERCULOSIS PROGRAMME



DETECTION AND DIAGNOSIS OF TB

National Centre for Infectious Diseases

Encourage early diagnosis of active TB

- Clinical practice guideline – encourage primary care doctors to screen persons with more than 3 weeks of cough
- CXR available in polyclinics
- Diagnosis: two sputum samples (AFB smear and culture)
- Detection of resistance with rapid nucleic acid testing (GeneXpert/Rif, Hain, BDMax), DST (1st and 2nd line drugs) available at two main laboratories
- Abnormal CXR referred to specialist TB unit for evaluation

Contact screening and LTBI treatment

- Contact tracing carried out for all cases of pulmonary TB
- Done using 'stone-in-the-pond' approach
- Contacts screened using IGRA (TST in children under 2 years of age)

DETECTION AND DIAGNOSIS OF TB

National Centre for Infectious Diseases

Active screening

- Pre-employment screening for active TB for healthcare workers, vocational licence drivers, preschool teachers with CXR
- Entry screening for majority of long-term residents on pass application

Surveillance

- National TB Registry captures all laboratory notifications from public hospitals for positive AFB smear/ culture/ TB PCR results
- Will liaise with clinicians if no accompanying clinical notification to ensure patients are started on treatment promptly

TREATMENT OF TB

National Centre for Infectious Diseases

Treatment regimens and delivery

- Standard WHO regimens used for drug-sensitive and drug-resistant TB
- All drug-resistant cases to be managed by the TB Control Unit (national treatment centre)
- Majority of patients placed on DOT
- Limited number on SAT, those unable to come to healthcare centre for DOT offered outreach DOT
- Increasing use of VOT

Management of comorbidities

- All patients screened for diabetes and HIV
- Patients with HIV started early on anti-retroviral therapy (unless contraindications present)

TREATMENT OF TB

National Centre for Infectious Diseases

Surveillance

- National TB Registry conducts surveillance for all TB cases - monthly treatment progress, mode of delivery, regimen type
- Reminders sent out to clinicians if not updated

PREVENTION OF TB

National Centre for Infectious Diseases

Prevent infection

- BCG at birth as part of childhood immunisation schedule

Prevent breakdown to active TB

- Preventive therapy (PT) for those with LTBI
- Elderly and MDRTB contacts also undergo CXR screening
- Window PT for children under 5 years of age
- 6 monthly CXR surveillance for patients not on PT

Interrupt transmission

- 2 weeks medical leave for those diagnosed with TB
- Patients with MDRTB placed in isolation until two consecutive negative cultures
- Whole genome sequencing done to detect clusters of TB

CONTACT DETAILS OF FOCAL POINT

National Centre for Infectious Diseases

	Name	Designation	Email
1	A/Prof Jeffery Cutter	Director	Jeffery_CUTTER@moh.gov.sg
2	Dr Deborah Ng	Deputy Director	Deborah_ng@ncid.sg

National Centre for Infectious Diseases

Thank you

International conference of experts from Russia and ASEAN member states

"Improving the system interaction and exchange of experience in diagnosis, treatment and prevention of tuberculosis»

TB detection and diagnosis – Russian approaches

Anna Panova

Head of the Department of Laboratory Diagnostics

ФГБУ «НМИЦ ФПИ»

— основан в 1918 году —

National Medical Research Center for Phthisiopulmonology and Infectious Diseases of the Ministry of Healthcare of the Russian Federation

Main challenges for the TB control in Russia

Proportion of patients with TB-HIV co-infection among new cases

Proportion of patients with MDR-TB among new cases

National Algorithm for laboratory diagnosis TB

Algorithm approval

- алгоритм лабораторной диагностики ТБ регулируют Минздрав России и национальное профессиональное общество
- алгоритм лабораторной диагностики был реализован по всей стране в 2014 году

Algorithm is based

- на оценке диагностической эффективности фенотипических и молекулярно-генетических технологий, в том числе отечественных тестах
- на утвержденных схемах терапии федеральных клинических рекомендаций

Application of molecular-genetic methods for TB diagnostics and MDR-TB detection

Real time PCR, Russia

Amlitub-qPCR
Amplitub-MDR-qPCR (H и R),
Amplitub-FQ-qPCR (Fq)

Method of hybridization on biochips, Russia

TB-TEST (H, R, Fq, AG/CP, E)

Method of hybridization with type-specific probes (LPA)

Geno Type MTBDRPlus (H и R), MTBDRs (Fq, AG/CP)

GeneXpert MTB/RIF

Real time PCR, Amlitub-qPCR Russia

«Amlitub-qPCR +NTM»

Analysis of non-tuberculous mycobacteria

«Amlitub-- Differentiation»

Clinical Sample - DNA

«Amlitub-qPCR»

«Amlitub-*Beijing*»

Species differentiation inside M.tuberculosis complex

Detection and quantitative analysis *M.tuberculosis* complex

Genotyping

DST of MTB

«Amlitub-MDR-qPCR»

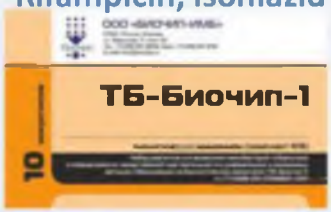
«Amlitub-FQ-PB»

MDR (1st line drugs): rifampicin isoniazid

XDR (1st line drugs): fluoroquinolones

Biochip hybridization analysis

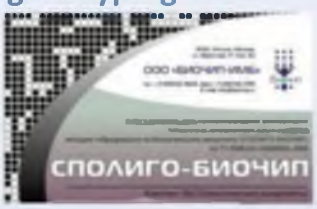
MDR (1st line drugs) Rifampicin, isoniazid



XDR (2st line drugs) fluoroquinolones

DST for rifampicin, isoniazid, fluoroquinolones, amikacin, kanamycin, capreomycin and ethambutol (analysis of 120 genetic determinants). Genotyping of MTB

Differentiation of MBT: *M. bovis BCG*, genotyping of MTB



Differentiation of MTB and NTM

Algorithm for laboratory diagnosis TB

I. MBT detection (two samples of biomaterial):

- **Microscopy AFM:** 2,5-48 hours
- **Xpert MTB/RIF or Amlitub-qPCR, differentiation of mycobacterium tuberculosis from non-tuberculous mycobacteria:** 2,5-48 hours
- **Liquid culture:** 7-14 days

MTB DNA +

II. Identification of MBT resistance markers to first-line drugs

Xpert MTB/RIF: *rpoB*
Amplitub-MDR-qPCR: *rpoB, katG, inhA*
Biochip: *rpoB, katG, inhA, ahpC*
LPA: *rpoB, katG, inhA, ahpC*

DR

II. Identification of MBT resistance markers to second -line drugs

Amplitub-FQ-qPCR : *gyrA*
Biochip: *gyrA, gyrB, eis, rrs*
LPA: *gyrA, gyrB, eis, rrs*

DS

pDST for first-line drugs

Liquid culture: RIF, INH, SM, PZA, EMB

DR/DS

pDST for first and second -line drugs

Liquid culture: AMK, KAN, CAP, LFX, MFX (0,25; 1,0), LZD, BDQ and PZA, EMB

Development of a network of National Reference Laboratories

April 27, 2015 three bacteriological laboratories of federal specialized research institutes received WHO certificates as Centers of Excellence Network supranational WHO reference laboratories

Since August 2019, the National Medical Research Center of Phthisiopulmonology and Infectious Diseases is a WHO collaborating center

Tuberculosis is a priority health problem in the Russian Federation

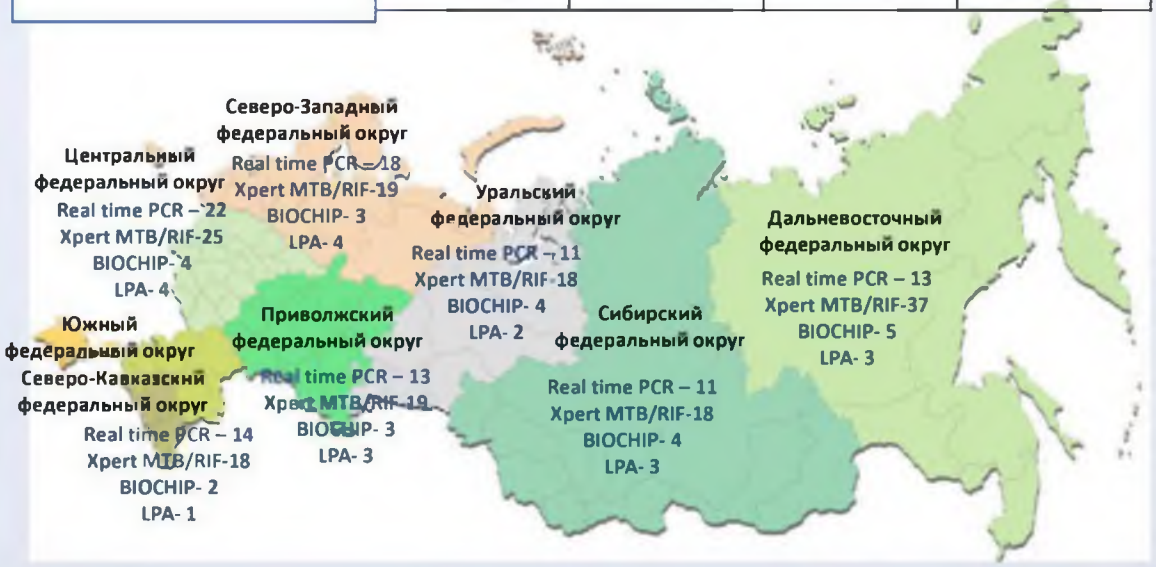
The detection and diagnosis of tuberculosis is a priority task of the Russian Ministry of Health.

Detection, diagnosis and treatment of tuberculosis - free for Russian citizens.

Subsidies are allocated annually from federal funds for reagents and equipment.

Number of laboratories using the genotypic method

Total: 297 TB laboratories	Real time PCR	Xpert MTB/RIF	BIOCHIP	LPA
	102 TB Labs	153 TB Labs	25 TB Labs	20 TB Labs



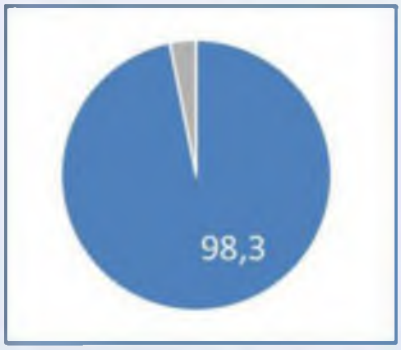
Number of laboratories using the cultural method

Total: 280 TB laboratories using the cultural method	Number of laboratories providing DST	
	First-line drugs	First and second –line drugs
	198 TB Labs	163 TB Labs

Number of laboratories using liquid media (MGIT system): 136 TB Labs, 161 devices

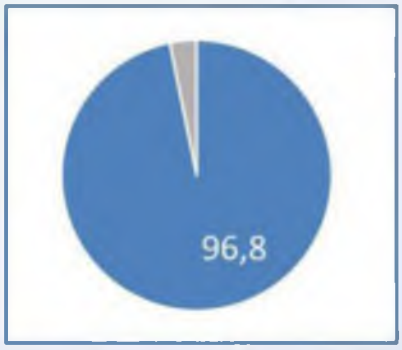
Coverage of TB patients with diagnostic tests

Coverage of rapid molecular test among TB patients



Coverage of cultural method among TB patients

Coverage of DST among laboratory-confirmed pulmonary TB cases



Conclusion

The algorithm for detecting and diagnosing tuberculosis in the Russian Federation includes technologies:

- recommended by WHO (Xpert MTB | / RIF, LPA-analysis, culture method on liquid culture media in the MGIT system)
- Russian molecular technologies (RT-PCR using the Amplitub test system and hybridization with type-specific probes on biochips using the Biochip test system)

The existing equipment park in the regions of the Russian Federation and the centralized procurement of reagents, at the expense of the Federal budget, provides coverage of tuberculosis patients with modern tests, which allows you to quickly diagnose, determine the drug sensitivity of the office and determine treatment tactics, as well as monitor the effectiveness of treatment

ЦНИИТ

New technologies of tuberculosis and nontuberculosis diseases diagnostics.

Romanov V.V.

Central TB Research Institute, Moscow, Russia

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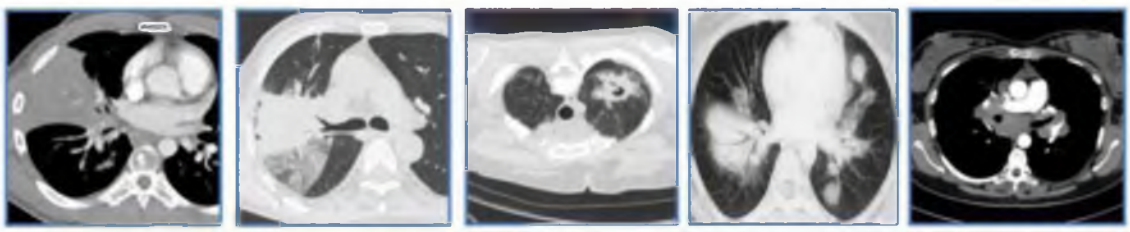
Background

Differential diagnostics of changes in the lungs due to tuberculosis (TB) or nontuberculosis (non-TB) diseases is complicated by similarities in clinical and radiological features of the diseases. That is why diagnostic errors account for 40% to 80% of observations.

Misinterpretation of radiological findings is *common.*



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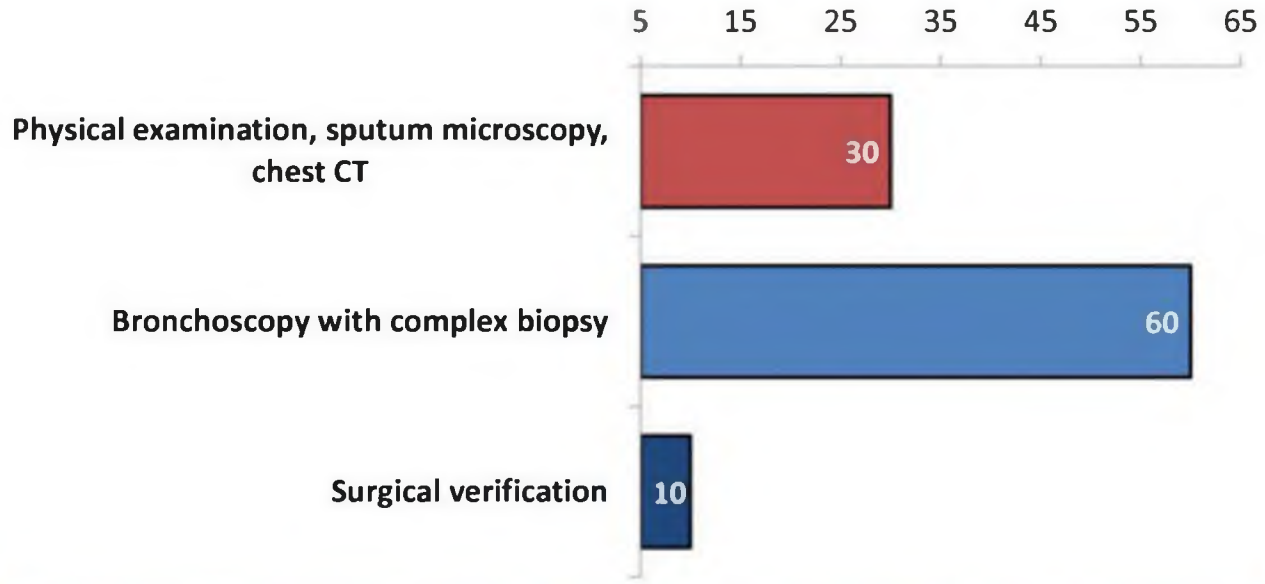
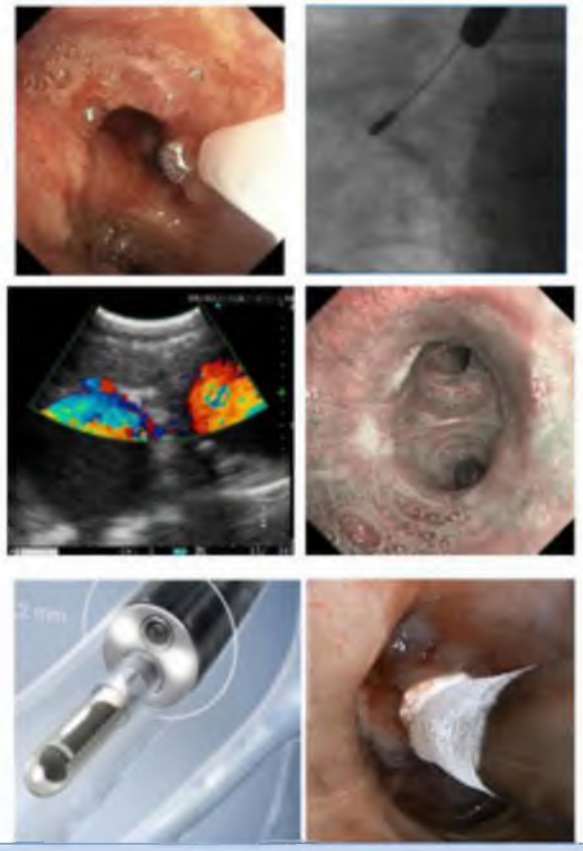
Stage diagnostics of patients with unspecified diagnosis



Bronchoscopy is a principal method of low-invasive diagnostics of lung or mediastinum diseases in patients with unspecified diagnosis

The potentials of bronchoscopy – diagnostics



- High-definition (HD) bronchoscopy
- Brush biopsy
- Bronchoalveolar lavage
- Endobronchial biopsy
- Transbronchial biopsy
- Classic needle biopsy
- Endoscopic ultrasound-guided fine-needle biopsy of ITLN or pulmonary nodules
- Bronchial/lung cryobiopsy

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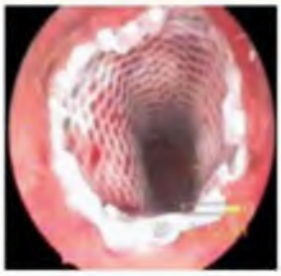
The potentials of bronchoscopy – treatment

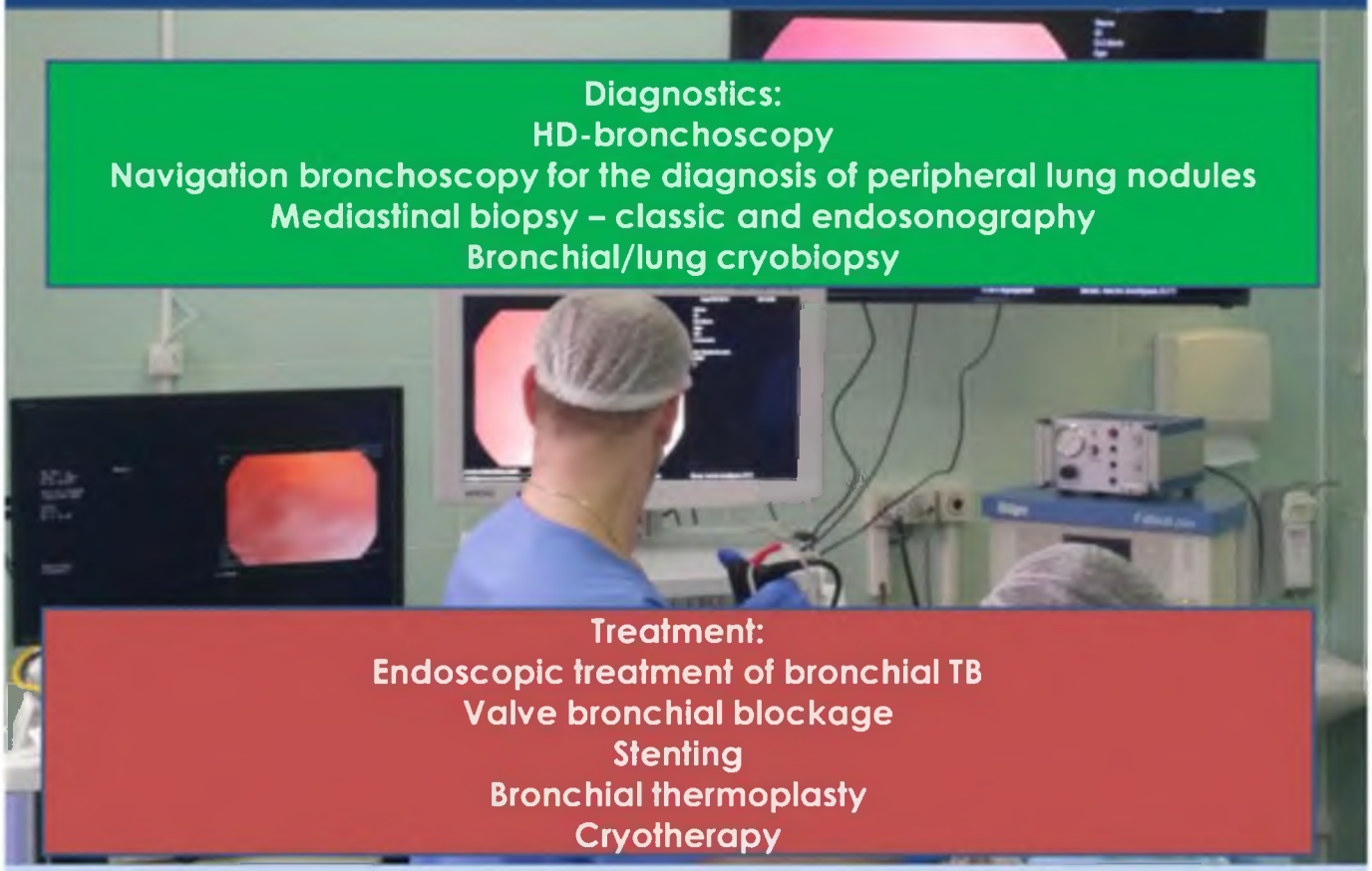





- Peribronchial injection
- Valve bronchial blockage
- Endobronchial electrosurgery
- Low-power tracheal and bronchial laser irradiation
- Tracheobronchial stenting
- Cryo-recanalization
- Tracheobronchial recanalization using high-power laser
- Bronchial thermoplasty

Many of therapeutic manipulations are guided by rigid bronchoscopy, including HD-bronchoscopy.

Modern diagnostic and therapeutic bronchoscopy



Diagnostics:
HD-bronchoscopy
Navigation bronchoscopy for the diagnosis of peripheral lung nodules
Mediastinal biopsy – classic and endosonography
Bronchial/lung cryobiopsy

Treatment:
Endoscopic treatment of bronchial TB
Valve bronchial blockage
Stenting
Bronchial thermoplasty
Cryotherapy

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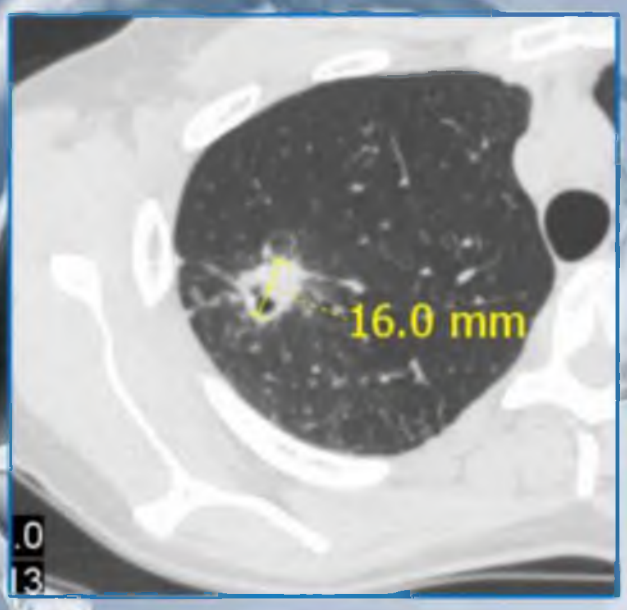
Peripheral pulmonary nodules: endosonography

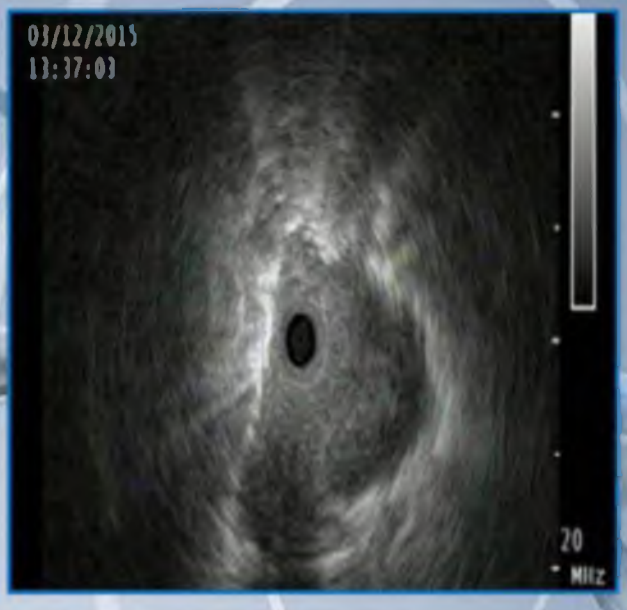
- High effectiveness of endobronchial biopsy up to 80%
- Description of internal structure of nodules
- Risk of pneumothorax development less than 2%
- Easy personnel training and low cost
- Absence of irradiation

Endoscopic ultrasound mini-probes improve the diagnosis of pulmonary nodules from 50 to 80% (Chan 2009, Lin 2015)
Effectiveness of diagnosis of peripheral pulmonary nodules at Central TB Research Institute:

88% (Shabalina I.Yu., 2019)

Peripheral pulmonary nodules: endosonography





A female patient aged 32, non-smoker.
Suspicion of tuberculoma in S2 of the right lung.
The bacteriology studies of samples obtained by navigation bronchoscopy established mycobacteriosis
(M. kansasii)

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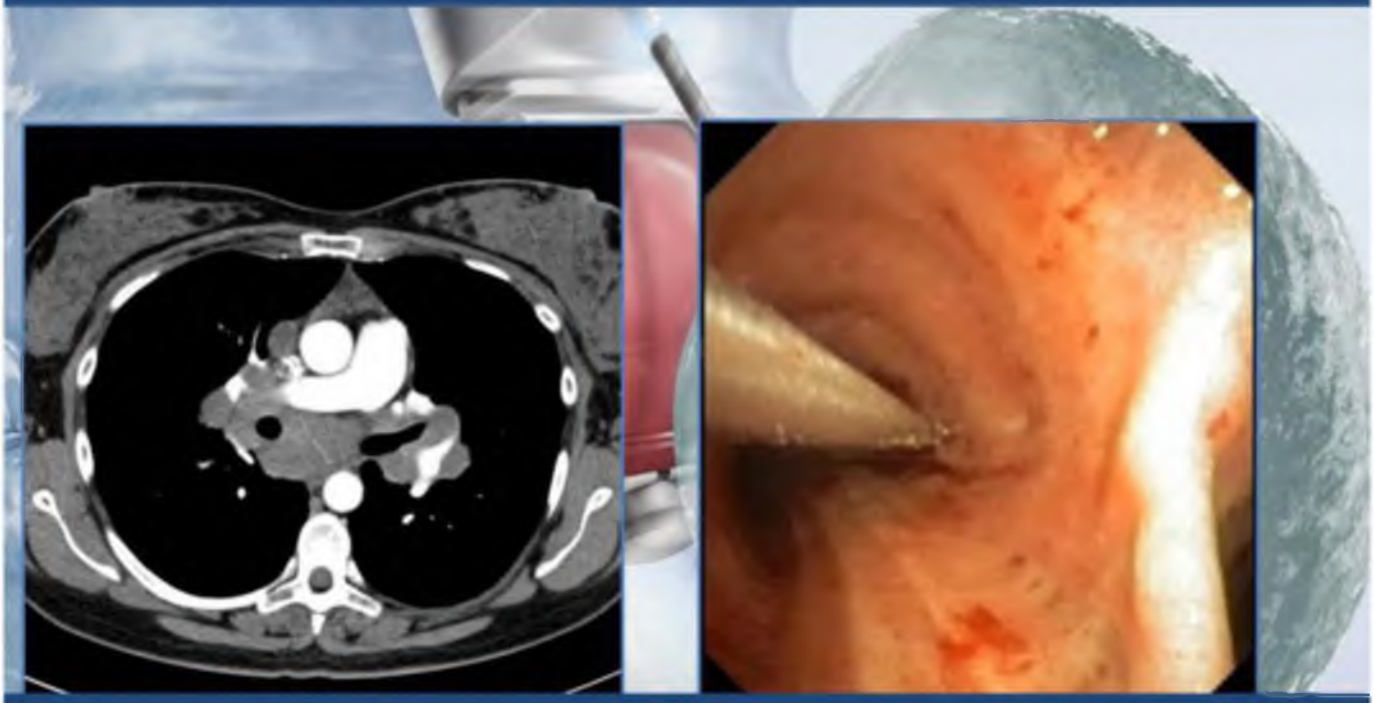
Mediastinal diseases – classic biopsy



The Endoscopy Department of the institute resumed:
routine rigid transbronchial needle aspiration biopsies
effectiveness of such manipulations is over 80%
(Sivokozov I.V., 2019)

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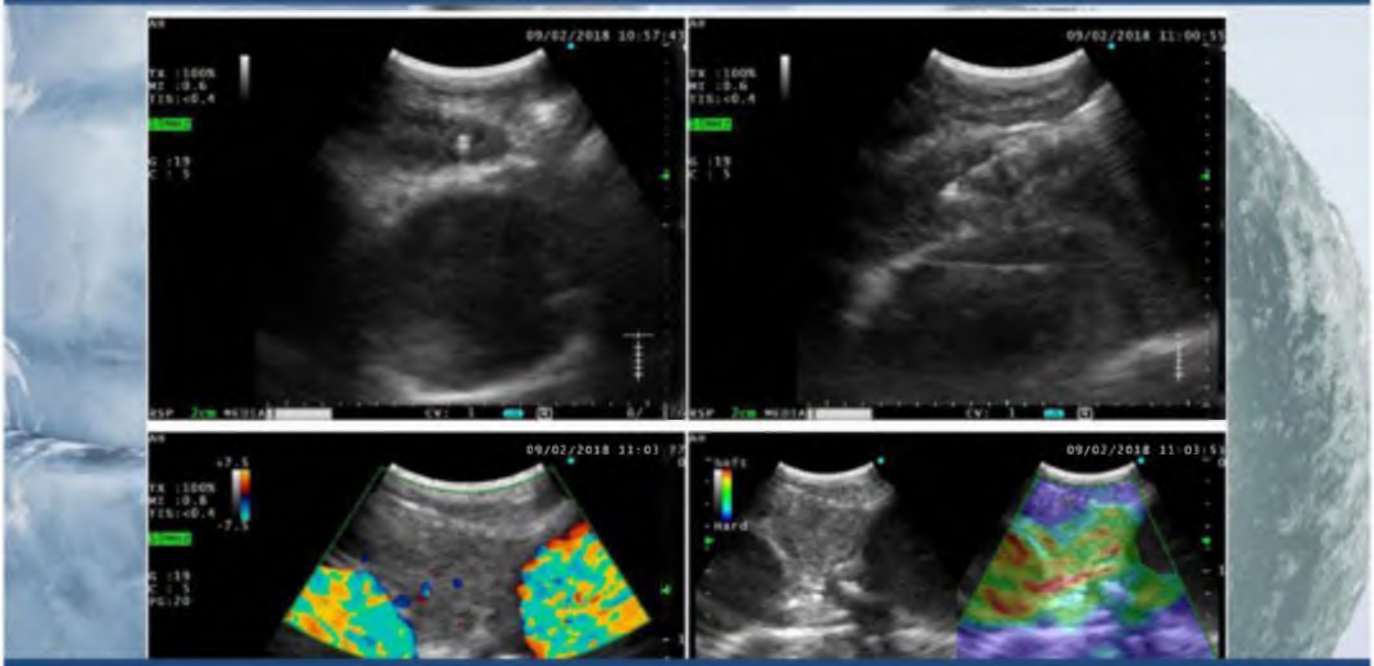
Mediastinal diseases – the potentials of verification



The specialists of the Endoscopy Department performed first-ever in Russia:
mediastinal puncture in children aged 2-5 (Sivokozov I.V., 2018)
mediastinal puncture through great vessels
contrast-enhanced endoscopic ultrasound of the mediastinum (first-ever in the world)
effectiveness of such manipulations is over 93% (Sivokozov I.V., 2019)

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Cryo technologies in bronchology

Κρύο (Greek) – «cold»
Exposing to low temperatures with diagnostic or therapeutic effect

Diagnostics: bronchus/lung/pleura cryobiopsy

Treatment: bronchial cryo-recanalization

Treatment: cryodevitalization

Treatment: spray cryotherapy (scarring tracheal stenosis)

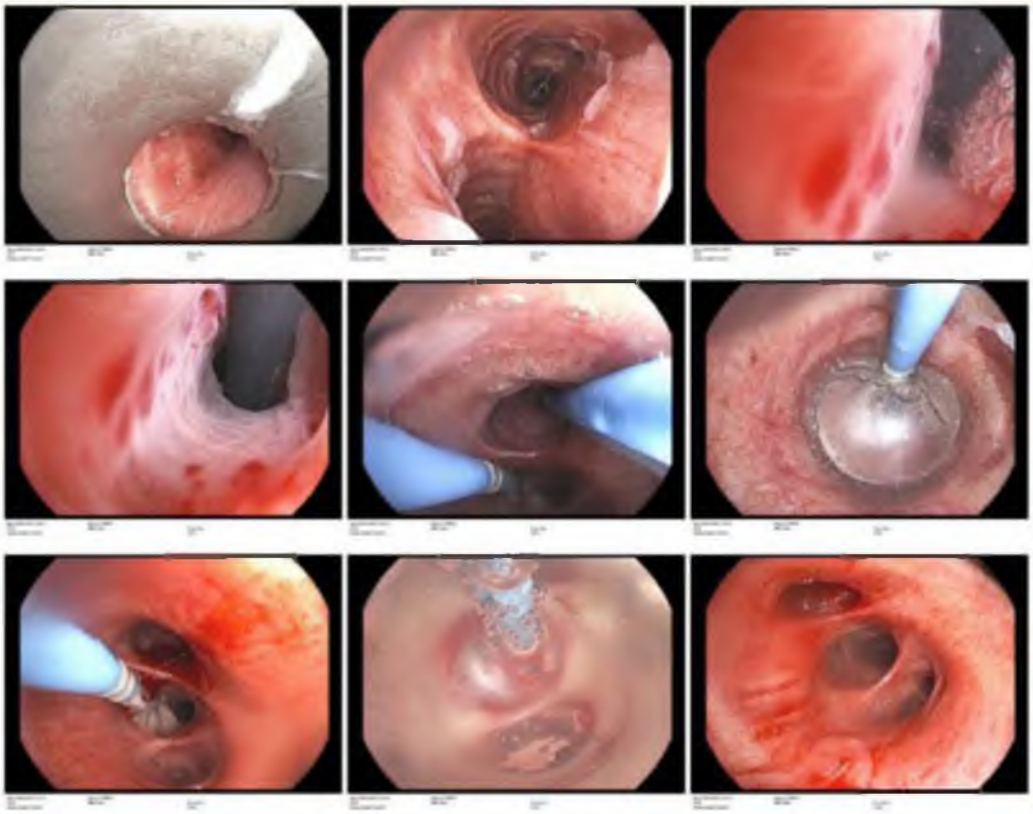
Transbronchial cryobiopsy

- The fast cooling effect of the mini-probe attaches the surrounding tissue
- Large-volume tissue samples (~ 10 times larger vs classic technique)
- Absence of artefacts after sampling
- Preserved tissue structure during processing

Cryobiopsy allows to improve effectiveness of classic lung biopsy without invasive or costly tools (surgery, endosonography).

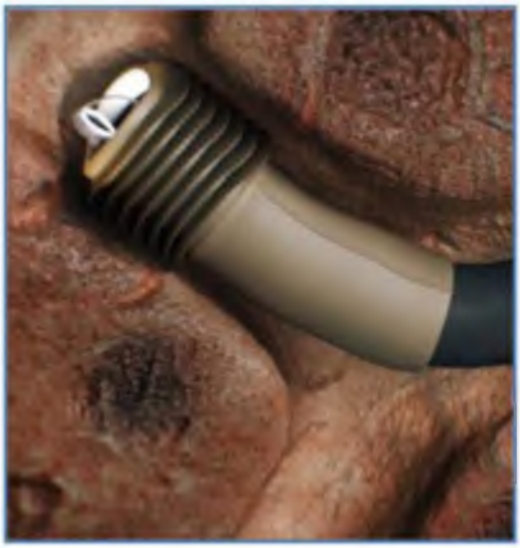
The specialists of the Endoscopy Department performed:
first-ever lung cryobiopsy in Russia
first-ever lung cryobiopsy in idiopathic pulmonary fibrosis (IPF) in Russia

Transbronchial cryobiopsy – what does it look like



Sivokozov I.V.

Endoscopic valve bronchial blockage



Indications for use:

In thoracic surgery

Pulmonary hemorrhage: grade 1-2 – for prevention of blood aspiration, tracheobronchial dyskinesia (TBD)

A spontaneous pneumothorax – for air leak cessation

Postresection empyema and residual cavities with a bronchopleural fistula – for air leak cessation

In TB treatment

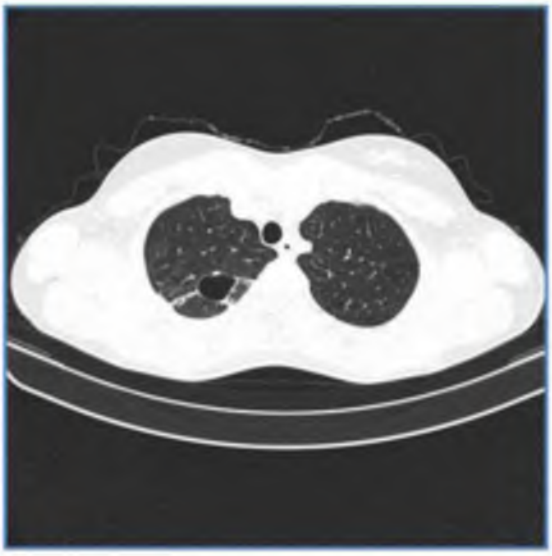
Fibrocavernous or cavernous pulmonary TB with MDR, XDR – for cavity closure

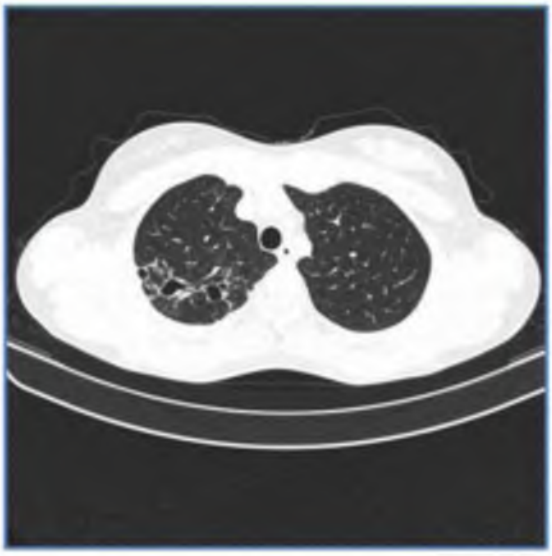
Effectiveness of valve bronchial blockage for cavity closure and sputum conversion in MDR/XDR patients is over 70%

(Lovacheva O.V., Shabalina I.Yu., 2012-2018)

Endoscopic valve bronchial blockage

A female patient aged 26 with established mycobacteriosis (M. kansasii), on treatment for 12 months, referred for surgery





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Valve bronchial blockage

A valve installation in the mouth of the right upper lobe bronchus (local anesthesia, in the ambulatory setting)

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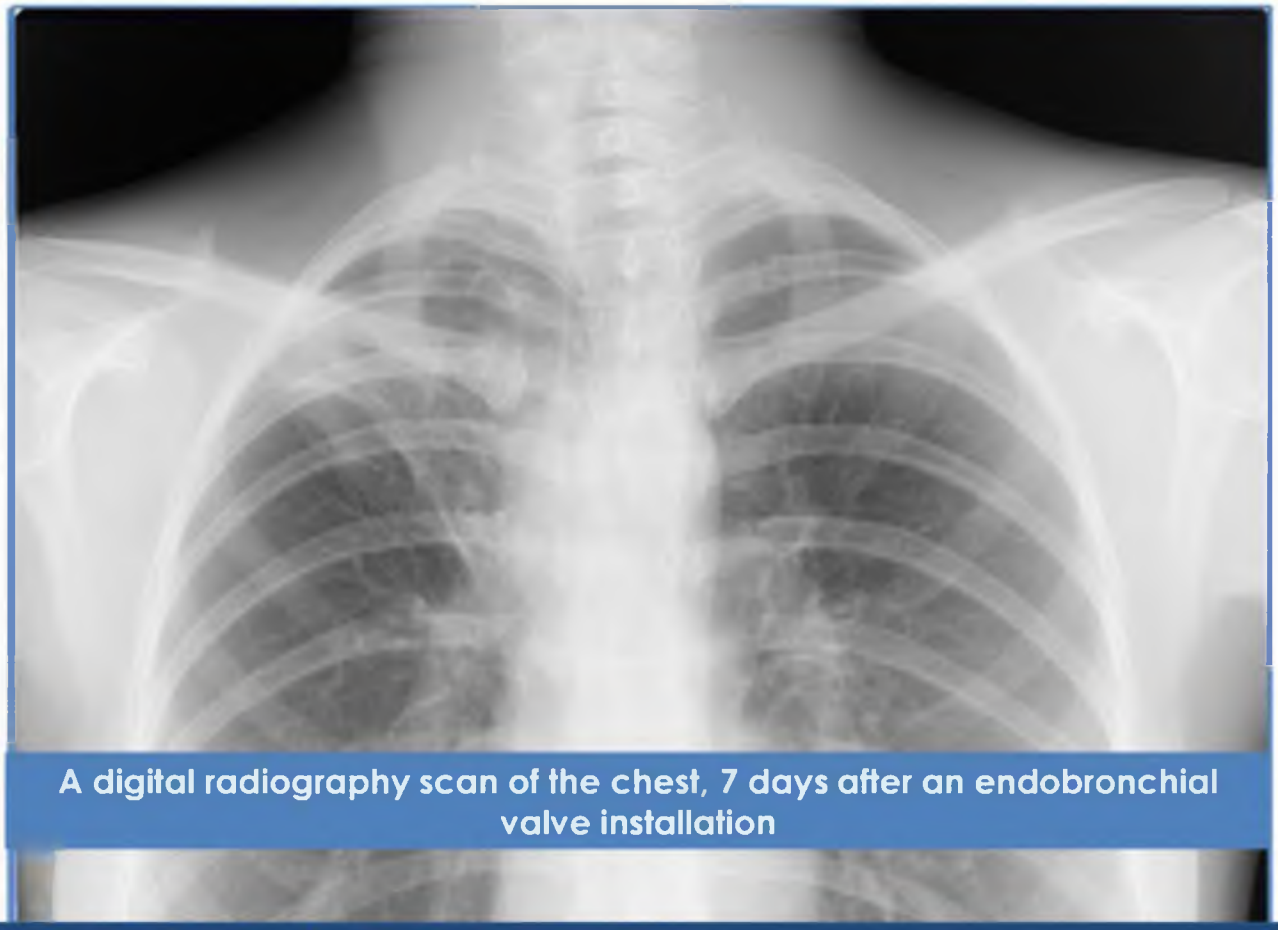
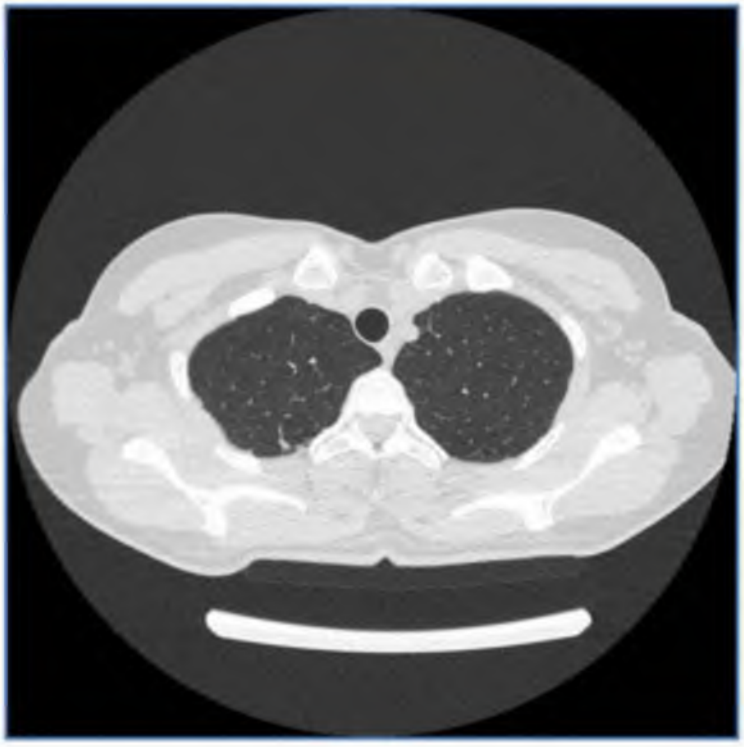
Radiography dynamics



A digital radiography scan of the chest, 7 days after an endobronchial valve installation

The dynamics by chest CT examinations, 3 months after an endobronchial valve installation



The training centre of Central TB Research Institute

Over 50 trainees every year
Thematic courses within the framework of the Continuing medical education (CME)

Publications and guidelines


Chapter 3

Endobronchial Ultrasound in Mediastinal Lymphadenopathy

Ilya V. Shotcicov, Olga V. Lohachova, Irina Y. Shabalina, Galina V. Evgushenko, Tatyana A. Statsuk, Larisa N. Lepetcha, Yuri S. Berezovsky, Natalya N. Makaryants, Larisa N. Chernousova and Elena E. Larionova

The personnel of the Endoscopy Department publish articles in high impact factor foreign and Russian journals every year.
The first-ever guidelines on endosonography in Russia were developed.

Conclusion

The present potentials of bronchoscopy allow to significantly improve effectiveness of low-invasive diagnostics of lung or mediastinum diseases in pulmonology and phthisiology.

The therapeutic potentials of bronchoscopy will be increasing in the nearest decade.

The algorithm of TB diagnostics based on rapid methods of *M. tuberculosis* detection and drug susceptibility testing

Step 1:
Screening of diagnostic samples by molecular genetic methods allows to identify mutations associated with resistance to rifampicin, isoniazid or fluoroquinolones within 1-2 days and establish *M. tuberculosis* susceptibility to major TB drugs.

Hospitalization of MDR TB patients to a specialized department.

Step 2:
Phenotypic determination of drug resistance using the automated system BACTEC MGIT 960. (The most rapid standardized method of drug resistance determination to a wide spectrum of TB drugs allows to obtain results within 4-14 days after getting culture.)

Administration of an individualized chemotherapy regimen including the maximal number of drugs, to which mycobacteria are still susceptible.

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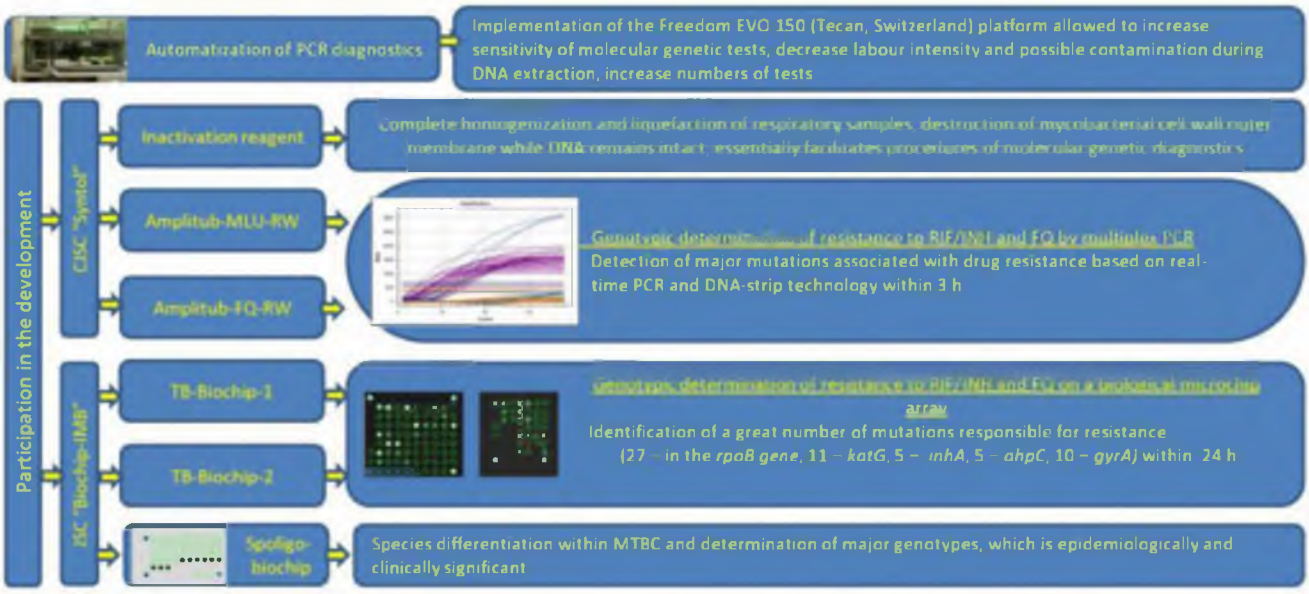
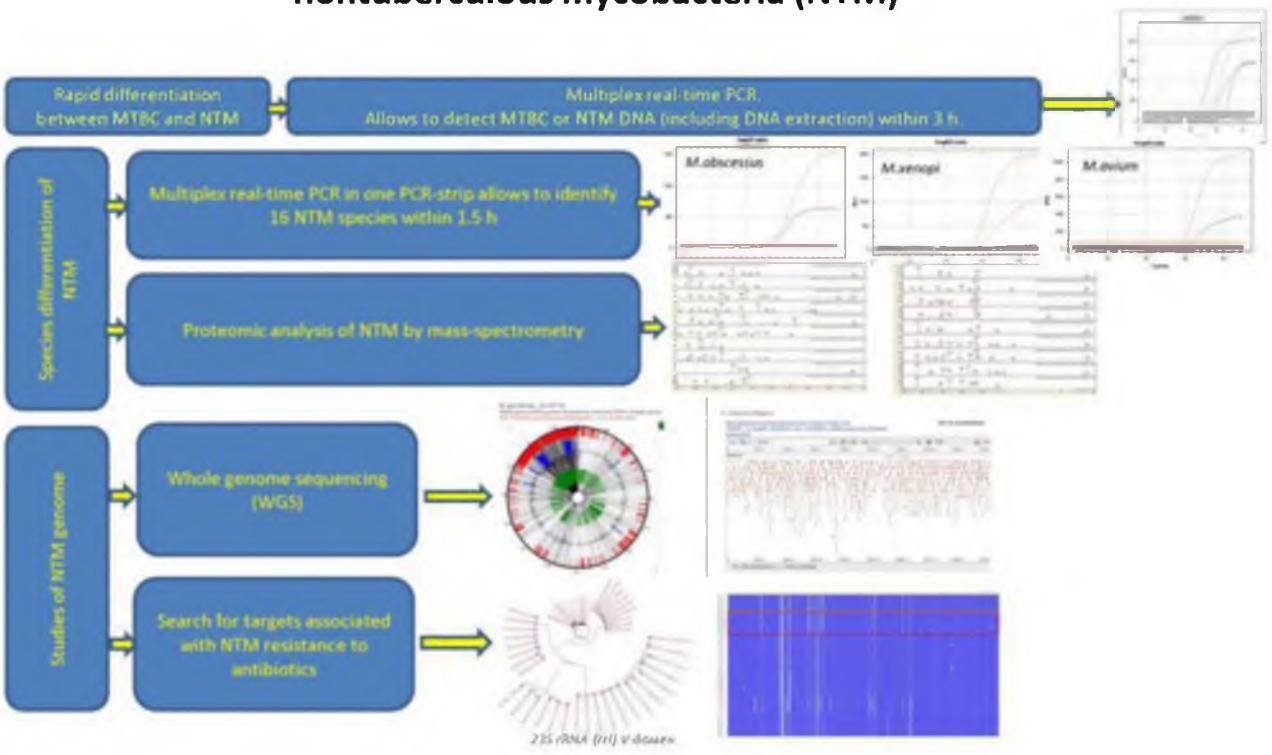
The input of Central TB Research Institute into the development of rapid methods of MDR/XDR TB diagnostics



The advancements of Central TB Research Institute in the studies of nontuberculous mycobacteria (NTM)

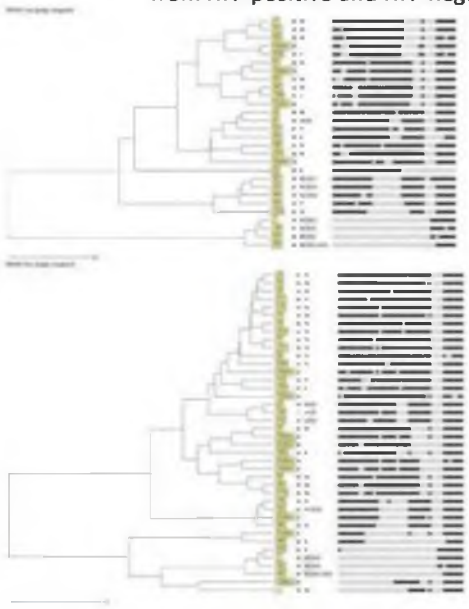


Molecular and epidemiological studies of *M. tuberculosis*

Major spoligotypes of *M. tuberculosis* in the Russian Federation

Group / Cluster		Spoligoprofile
Beijing		
Haarlem	H1	
	H3	
	H4	
LAM	LAM1	
	LAM3	
	LAM9	
T	T1	
	T2	
	T4	
	T5	
U		

Genetic polymorphism of *M. tuberculosis* strains isolated from HIV-positive and HIV-negative TB patients



M. tuberculosis strains isolated from HIV-positive TB patients:
- less diversity of genotypes;
- the Beijing genotype with MDR was reliably more prevalent

Horizon 2020: complex solutions for rapid and highly effective diagnostics of pulmonary TB, including detection, drug resistance determination and TB treatment monitoring

1. THE UNIVERSITY OF EDINBURGH (UEDIN), United Kingdom
2. DESTINA GENOMICA (DGSL), Spain
3. HERIOT-WATT UNIVERSITY (HWU), United Kingdom
4. UNIVERSITA DEGLI STUDI DI PADOVA (UNIPD), Italy
5. OPTOELETTRONICA ITALIA SRL (Optoi), Italy
6. GENETIC ANALYSIS STRATEGIES SL (GAS), Spain
7. CENTRAL TB RESEARCH INSTITUTE, Russian Federation
8. Indian Council of Medical Research (NIRT), India
9. SHANMUKHA INNOVATIONS PRIVATE LIMITED (SIPL) India

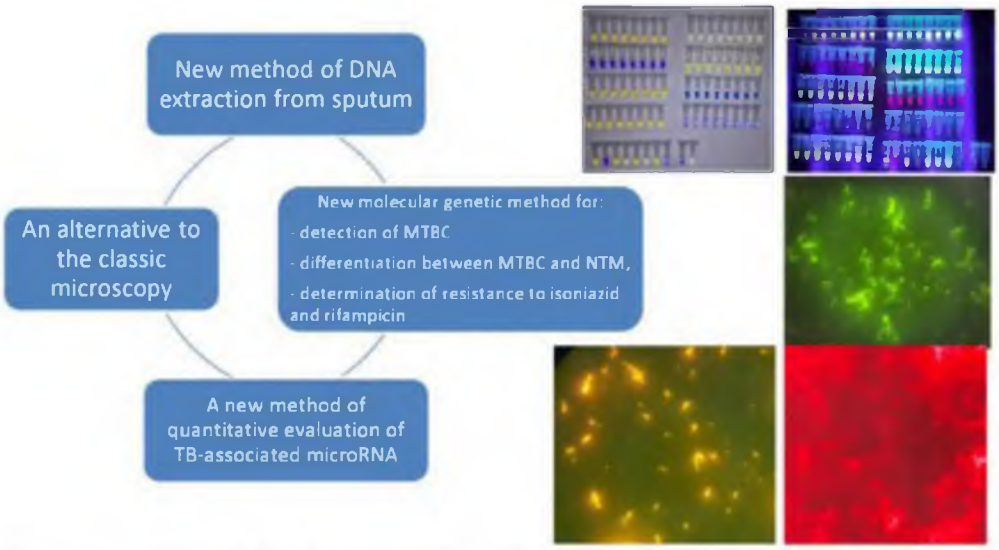
DEPARTMENT OF BIOTECHNOLOGY
Ministry of Science & Technology

The project objectives

1. To develop methods of mycobacteria detection directly in sputum at primary medical care facilities using new, low-cost, portable optical devices and specific fluorescent staining of mycobacterial cell wall
2. To deliver rapid and accurate tests for *Mycobacterium tuberculosis* complex presence and rifampicin- and isoniazid-resistance determination
3. To diagnose TB and monitor treatment using microRNA as biomarkers

The research was carried out under financial support by the Ministry of Science and Higher Education of the Russian Federation in the framework of the Federal Targeted Program for Research and Development in Priority Areas of Development of the Russian Scientific and Technological Complex for 2014–2020, Agreement No. 05.586.21.0065 (Agreement Unique Identifier RFMEFI58619X0065).

Complex solutions for rapid and highly effective diagnostics of pulmonary TB, including detection, drug resistance determination and TB treatment monitoring



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1. The test allows to detect *M. tuberculosis* and mutations associated with resistance to rifampicin and isoniazid
2. The use of original probes allows to increase accuracy of identification of single-nucleotide polymorphisms versus standardized or hybridization methods
3. The test enables to obtain results quickly (about 2 h from sputum collection to obtaining results)
4. The test may be used by primary medical care facilities and does not require specimen delivery to centralized laboratories
5. The easy-to-use test does not require special skills
6. The test is low-cost versus conventional/modern detection methods

The research was carried out under financial support by the Ministry of Science and Higher Education of the Russian Federation in the framework of the Federal Targeted Program for Research and Development in Priority Areas of Development of the Russian Scientific and Technological Complex for 2014–2020, Agreement No. 05.586.21.0065 (Agreement Unique Identifier RFMEFI58619X0065).

Malaysia: ***Roddy Teo «Mobile Xray services: Bringing Universal Access to the Community» (Ministry of Health of Malaysia)***

MOBILE X-RAY SERVICE FOR TB SCREENING

BRINGING UNIVERSAL ACCESS TO THE COMMUNITY

SHARING OF EXPERIENCE FROM SABAH DEPARTMENT OF HEALTH MINISTRY OF HEALTH, MALAYSIA

DR RODDY TEO
TB AND LEPROSY UNIT, SABAH DEPARTMENT OF HEALTH
MINISTRY OF HEALTH, MALAYSIA

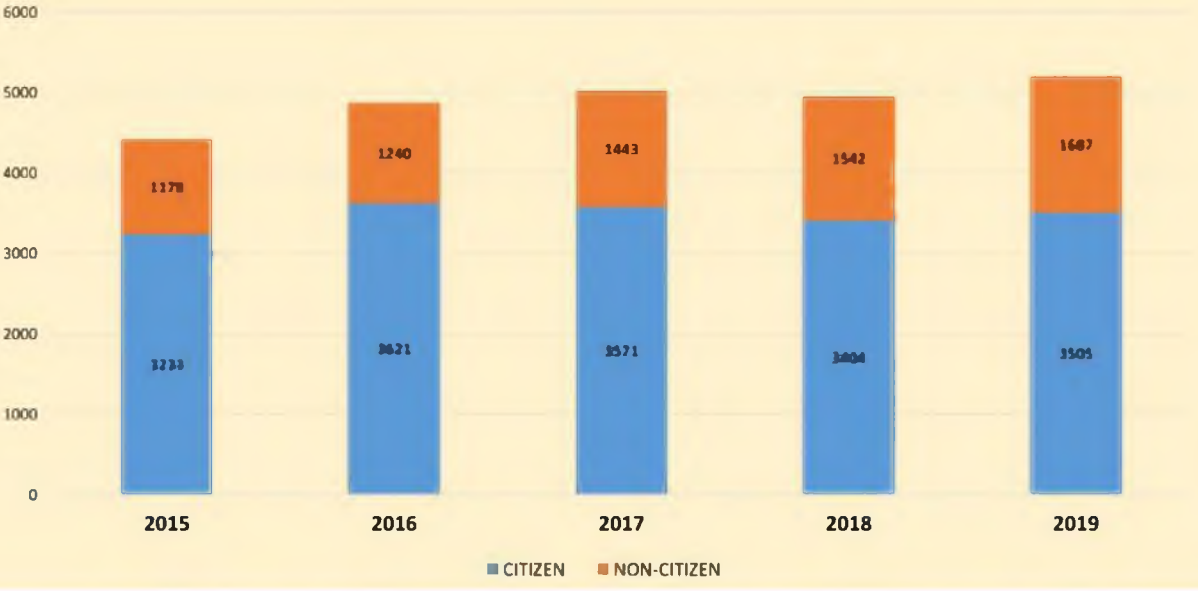
73,904 SQUARE KILOMETRES
POPULATION 3.9 MIL (2019)
42 ETHNIC GROUPS WITH OVER 200 SUB-ETHNIC GROUPS

KOPIVOSIAN

TB IN SABAH AND MALAYSIA

TB IN SABAH

CITIZENS AND NON-CITIZENS



GAP FOR TB DIAGNOSTIC SERVICES IN SABAH

- Only 31 government owned X-Ray facilities across the state
- Concentration of health care services in urban areas
- Health service coverage disparity; citizen vs non-citizen

COST OF 1 CHEST X-RAY EXPOSURE IN PRIVATE CLINIC AVERAGELY RM50 (EUR 10.3 / USD 12.10)

NOT INCLUDING CONSULTATION, PRESCRIPTIONS, OTHER INDIRECT COSTS

HOW MUCH IS RM50 WORTH?

UNIVERSAL COVERAGE AND ACCESS

- Universal health coverage has been set as a possible umbrella goal for health in the post-2015 development agenda.
- Universal health coverage is the goal that all people obtain the health services they need without risking financial hardship from unaffordable out-of-pocket payments.
- Involves coverage with good health services – from health promotion to prevention, treatment, rehabilitation and palliation – as well as coverage with a form of financial risk protection.

TB MOBILE XRAY SERVICE

SABAH HEALTH DEPARTMENT
MINISTRY OF HEALTH, MALAYSIA

SERVICE COMMISIONED IN 2016

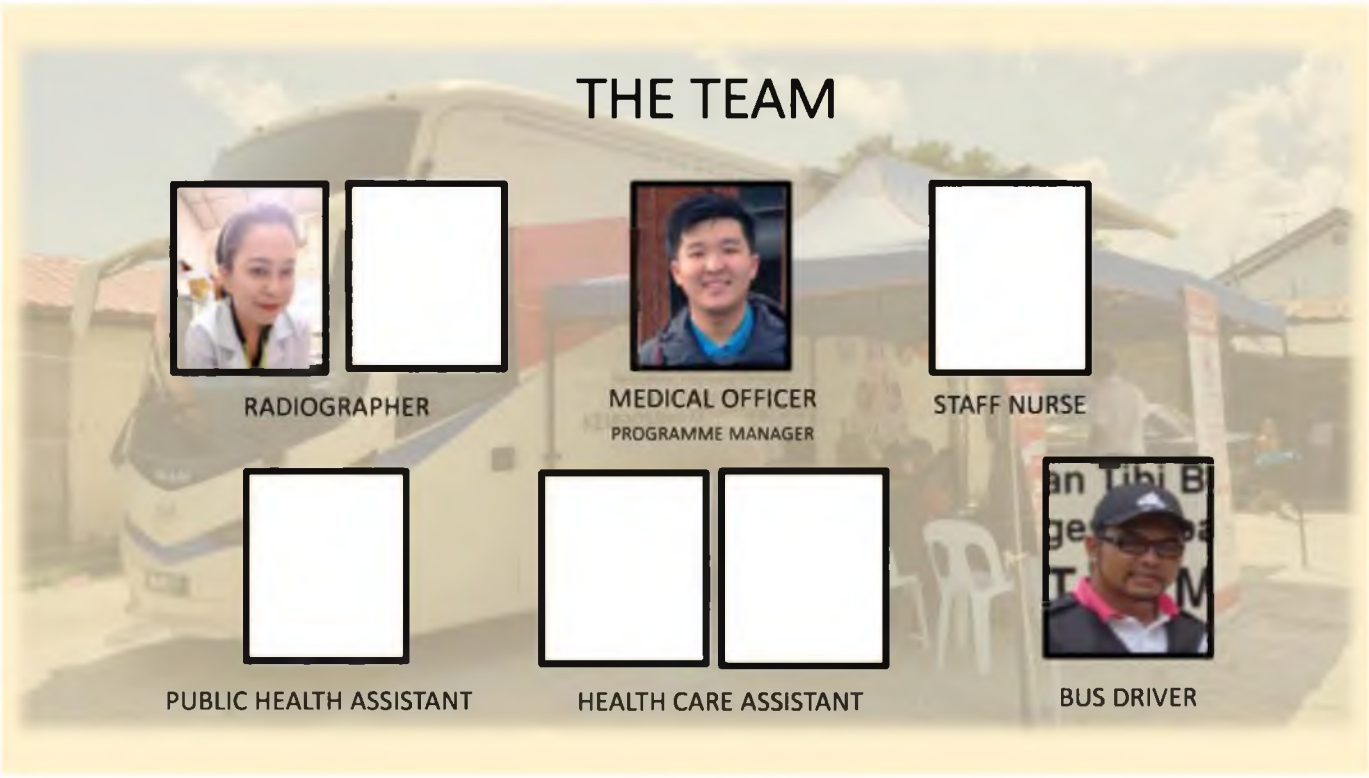
COST RM1,611,380

(EUR 330,300 / USD 389,645)

BRINGING UNIVERSAL ACCESS FOR TB DIAGNOSIS AND IMAGING TO THE COMMUNITY

SERVICES PROVIDED

XRAY IMAGING
SPUTUM SAMPLE COLLECTION
GENEXPERT SAMPLE COLLECTION
HEALTH EDUCATION
SPECIALIST CONSULTATION



MOBILE XRAY STATISTICS 2016-2020

	2016	(%)	2017	(%)	2018	(%)	2019	(%)	Jan- Jul 2020	(%)	TOTAL	(%)
NUMBER OF CLIENT ENGAGEMENTS	**10,626**		**12,033**		**13,961**		**13,373**		**4,770**		**54,763**	
NUMBER OF XRAY DONE	**10,560**	99	**10,422**	87	**11,738**	84	**11,163**	83	**4,251**	89	**48,134**	87
ABNORMAL CXR	**696**	6.6	**670**	6.4	**1,122**	9.5	**874**	8.4	**313**	7.4	**3,675**	7.5
PTB POSITIVE	**78**	0.7	**100**	0.96	**122**	1.04	**107**	0.96	**67**	1.4	**474**	0.98
SMEAR POSITIVE (SPUTUM AFB)	**36**	46	**54**	54	**70**	57	**70**	65	**47**	77	**277**	48
SMEAR NEGATIVE (GENEXPERT, MTB C&S, RESPIRATORY SPECIALIST)	**42**	54	**46**	46	**52**	43	**37**	35	**20**	23	**197**	42

SUMMARY OF SERVICE (2016-2019)

- Mobile X-Ray Service reached out to an average of 11,000 population a year
- Abnormal X-Ray detection 7.7%
- Positive TB detection rate of 0.92%
- Detection of TB among Sputum Smear Negatives clients (44.11%) through other services provided: GeneXpert, C+S, Specialist consultation

- Cost to detect 1 abnormal x-ray RM36.72
- Cost to detect 1 Pulmonary TB RM479.30

INTERIOR VIEW OF THE MAIN BODY OF MOBILE X-RAY BUS

OUTREACH PROGRAMME TO GIVE ACCESS TO RURAL COMMUNITY AND RURAL TB HOTSPOTS

YEAR	NUMBER OF HOTSPOTS	NUMBER SCREENED	POSITIVE CASES
2016	12	2576	24
2017	25	3525	44
2018	20	4242	53
2019	30	4050	50
	87	14393	171
			1.2%

OUTREACH PROGRAMME TO GIVE ACCESS TO RURAL COMMUNITY AND RURAL TB HOTSPOTS

SERVICE PROVIDED FOR THE INCARCERATED COMMUNITY

YEAR	NUMBER OF HIGH RISK INSTITUTIONS	NUMBER SCREENED	POSITIVE CASES
2016	10	6878	50
2017	3	5289	56
2018	5	6215	68
2019	7	5225	56
	25	23607	230
			1%

HIGH RISK INSTITUTIONS:
PRISON, OLD FOLKS HOME, IMMIGRATION DETENTION CENTRES, DRUG REHABILITATION CENTRES

SERVICE PROVIDED FOR THE INCARCERATED COMMUNITY: PRISON

SERVICE PROVIDED FOR THE INCARCERATED COMMUNITY: DRUG ADDICTION REHABILITATION CENTRE

OPPORTUNISTIC HEALTH EDUCATION

SERVICE PROVIDED FOR THE VULNERABLE COMMUNITY: OLD FOLKS' HOMES

DEPLOYMENT OF TB MOBILE XRAY SERVICES TO SUPPLEMENT COVID-19 XRAY STAGING IN RURAL COMMUNITY AREAS TO AID PANDEMIC CONTROL

BRINGING UNIVERSAL ACCESS FOR TB DIAGNOSIS AND IMAGING TO THE COMMUNITY

PONSIKOU

THANK YOU

Russia*: M.D, PhD. Prof Vadim Testov "Monitoring and surveillance of MDR-XDR TB in the Russian Federation"*

Monitoring and Surveillance of MDR-XDR TB in the Russian Federation

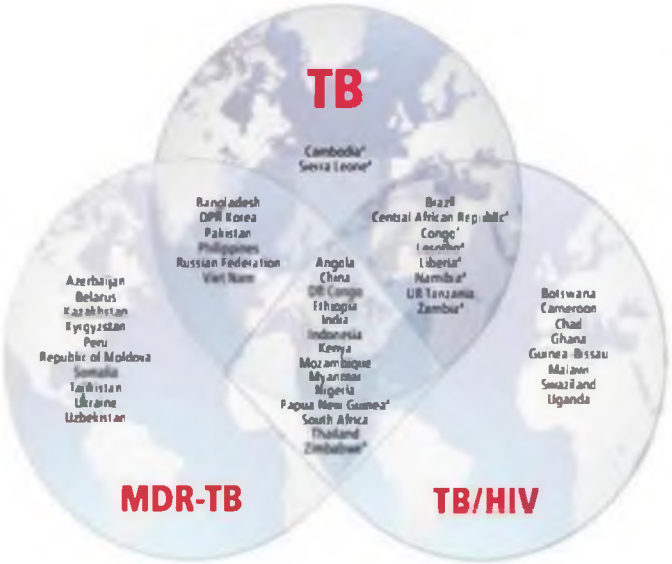
Dr. Vadim Testov

National Medical Research Center of Phthisiopulmonology and Infection Diseases, Ministry of Health of the Russian Federation

CONTEXT

- Problem of MDR-TB in the World;
- Problem of MDR-TB in the Russian Federation;
- Monitoring and Surveillance of MDR/XDR-TB in the Russian Federation - main approaches;
- Main topics of MDR/XDR-TB management in the Russian Federation;
- Discussion and Conclusion

TB, MDR-TB and TB-HIV Burden Countries



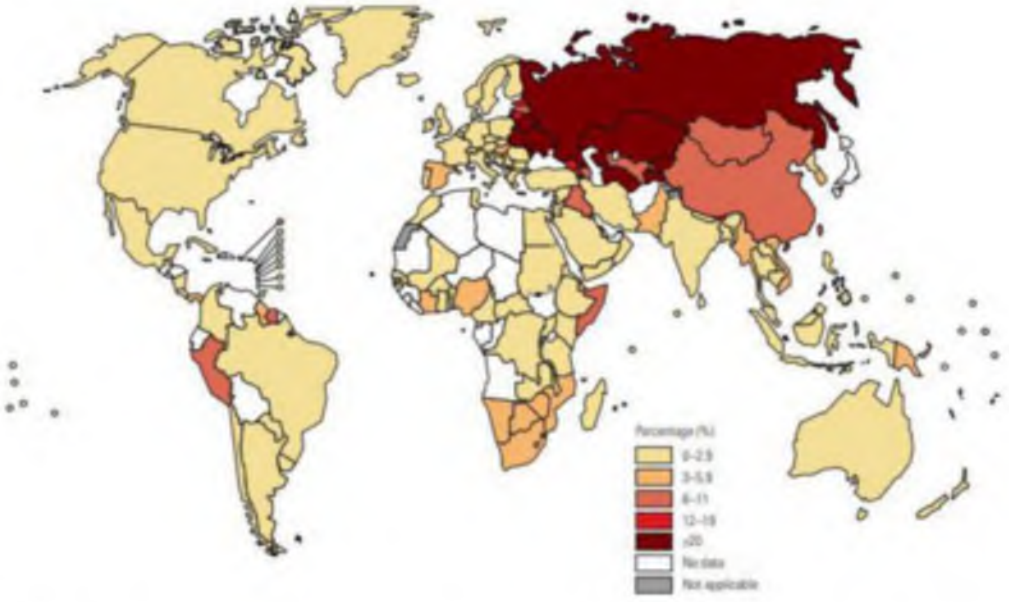
Incidence of MDR/RR-TB

WHO regions and globally	Number of MDR/RR-TB patients	Rates are per 100 000 population
Global	465000	6.1
Africa	77000	7.0
The Americas	11000	1.0
Eastern Mediterranean	36000	5.0
Europe	70000	7.5
South-East Asia	171000	8.6
Western Pacific	101000	5.2

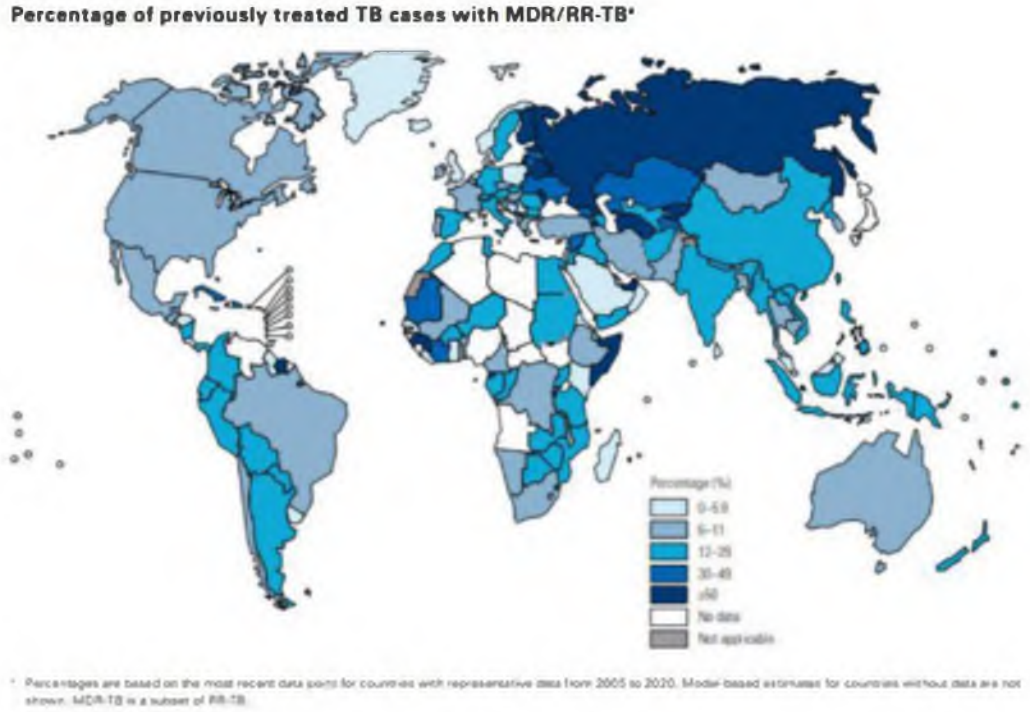
WHO Global TB Report

Percentage of New TB cases with MDD/RR-TB

Percentage of new TB cases with MDR/RR-TB*

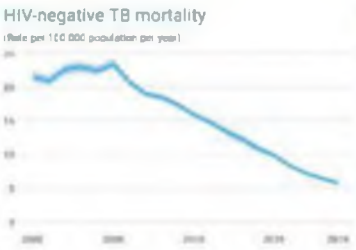


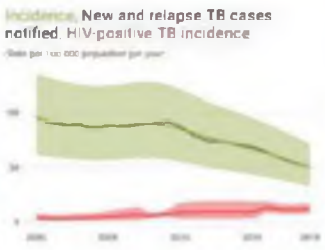
Percentage of Previously Treated TB cases with MDD/RR-TB

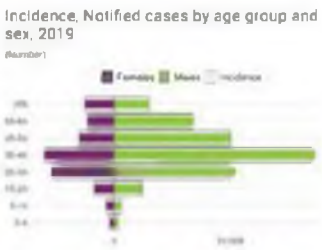


Russian Federation Country Profile: the Dynamics of Epidemiological Indicators

	Number	(Rate per 100 000 population)
Total TB incidence	73 000 (47 000-104 000)	50 (32-71)
HIV-positive TB incidence	17 000 (11 000-24 000)	12 (7.5-17)
MDR/RR-TB incidence**	39 000 (25 000-56 000)	27 (17-38)
HIV-negative TB mortality	8 400 (7 900-8 900)	5.8 (5.4-6.1)
HIV-positive TB mortality	1 300 (560-2 300)	0.88 (0.38-1.6)







Case detection rate = 100%

WHO Global TB Report 2020

MDR/RR-TB
Main Challenges for the TB Control

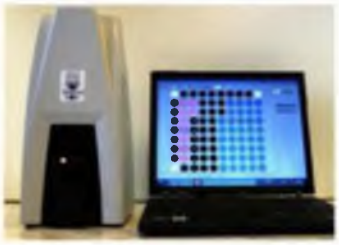
% of TB cases with MDR-TB among all new TB cases in the Russian Federation (2019) – **33,1%**

% of XDR TB among MDR–TB patients (new cases and relapses, 2019) – **12,7%**

Ongoing TB Research Implementation of Molecular-genetic Methods for TB diagnostics and MDR-TB detection

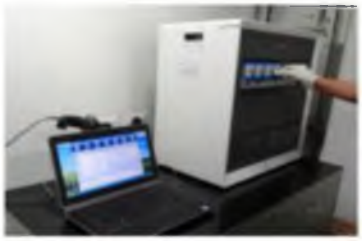
Real time PCR
Amplitub-RV, Russia
Amplitub–MDR RV(H и R),
Amplitub- XDR RV(Fq)

Method of hybridization on biochips
BIOCHIP-1 (H и R)
BIOCHIP-2 (Fq) TB-TEST (H, R, Fq, AG/CP, E)
Russia



Method of hybridization with type-specific probes (LPA)
Geno Type MTBDRPlus (H и R), MTBDRs (Fq, AG/CP)

«Cartridge» technology
GeneXpert MTB/RIF



Number of laboratories using the genotypic method

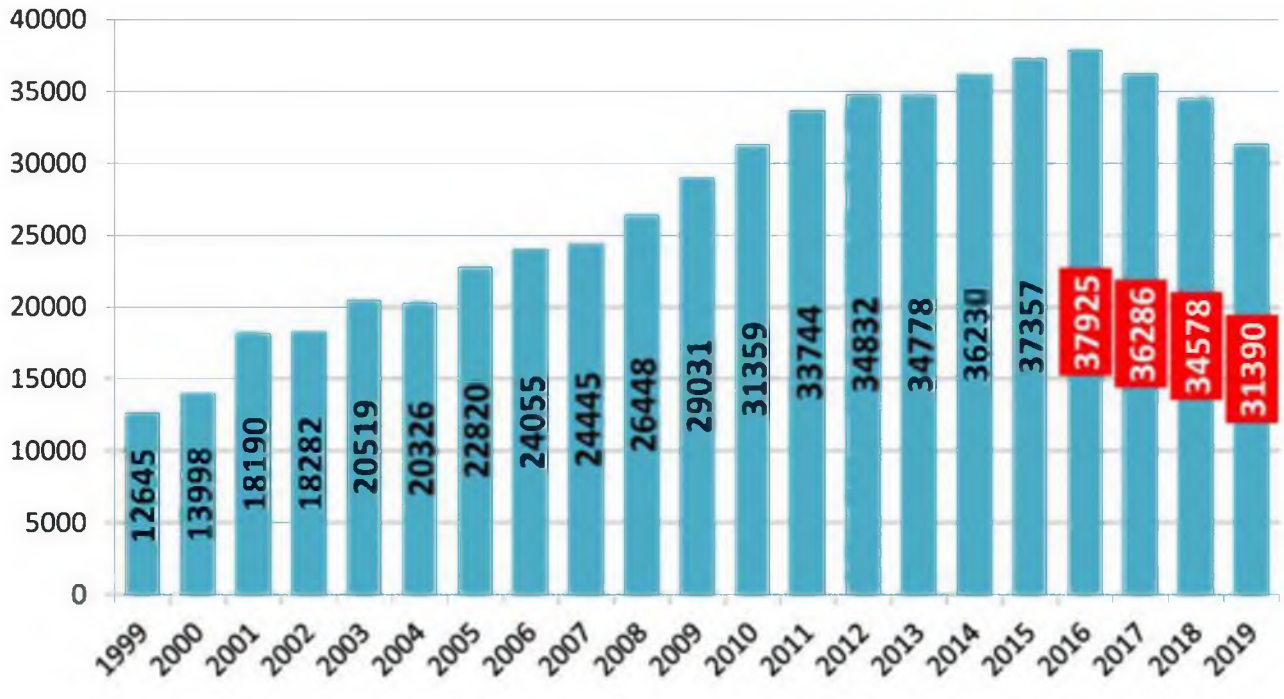
Total: 297 TB laboratories			
Real time PCR	Xpert MTB/RIF	BIOCHIP	LPA
102 TB Labs	153 TB Labs	25 TB Labs	20 TB Labs

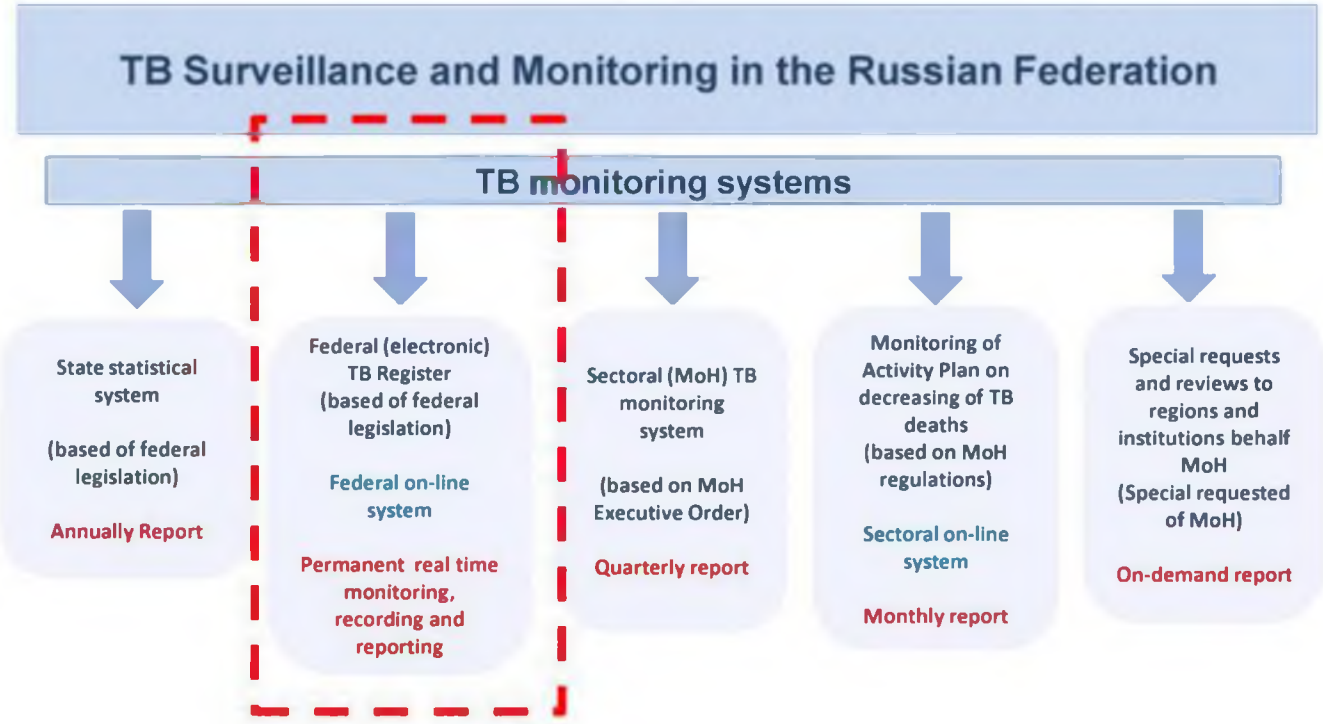
Number of laboratories using the cultural method

Total: 280 TB laboratories using the cultural method	
Number of laboratories providing DST	
First-line drugs	First and second-line drugs
198 TB Labs	163 TB Labs

Number of laboratories using liquid media (MGIT system): 136 TB Labs, 161 devices

Absolute Number of MDR-TB patients in Russia





Federal (across the country, electronic) TB Registration System as a new modern tool for epidemiological research and statistical reviews

- Revised State System of TB Surveillance and Monitoring based on the TB Registration System;
- Automated tools for DR surveillance;
- Centralization of control and monitoring of TB treatment;
- Centralized TB case management, online consultations and recommendations;
- Supervision of TB prophylaxis;
- Automated tools for anti-TB Drug management

All National Systems of TB monitoring should be combined within the framework of the Federal (electronic) TB Registration Systems

12

Structure and Implementation of Federal (electronic) TB Register

- **Federal Level:**
- Main server and data processing center
- Federal Group of Technical Support
- Federal Group for Monitoring

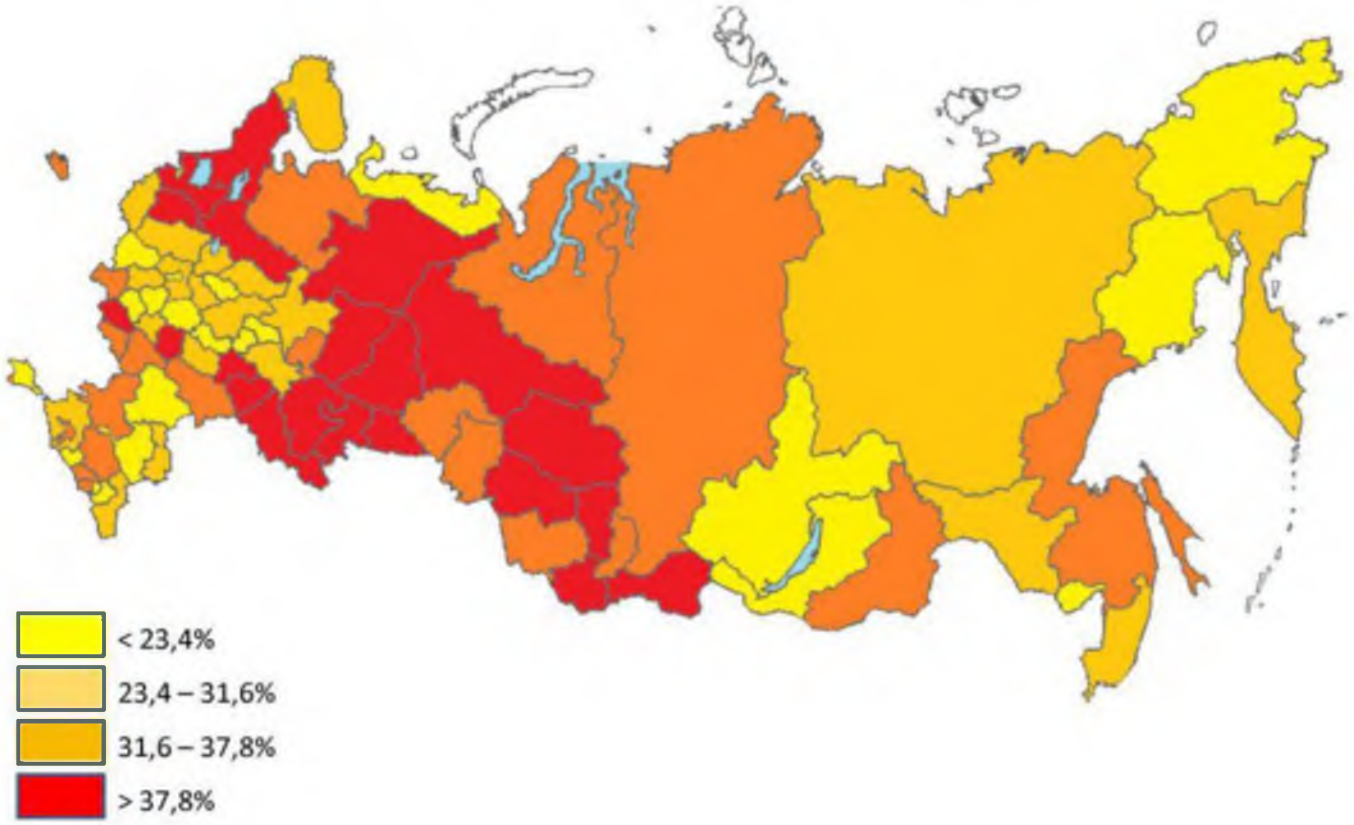
- **Regional Level:**
- Regional infrastructure for Federal (electronic) TB Register
- Regional Administrator of Register

- **Level of Health Facility:**

- Computer connected with Federal State information System in TB cabinet or TB department

- 2017 – All Russian subjects started implementation of Federal (electronic) TB Register
- 2018 – Reports on new TB cases and relapses notification, MDR/XDR-TB cases, TB/HIV cases, standard reports on: TB cases registration, Admitted TB treatment regimes
- 2019 - Reports on new TB cases and relapses notification, MDR/XDR-TB cases, TB/HIV cases, standard reports on: TB cases registration, Admitted TB treatment regimes, Treatment outcomes including special report for TB/HIV cases. Lab Register and Automated tools for DR Surveillance; Automated tool for anti-TB Drug management

MDR-TB among new TB cases, 2019



Prevalence of MDR-TB in Russian Regions, 2019

Principles of TB care in the Russian Federation

- TB care for Russian citizens is free of charge;
- Federal MoH provides drugs for MDR/XDR-TB treatment;
- Free access to TB care;
- State support and priority of financing for TB Control;
- Interdepartmental and intersectoral co-ordination;
- Active TB screening of population and effective passive TB detection;
- Prophylaxis of TB spread (TB vaccination BCG, TB Control in focus of infection, specialized activities in risk groups);
- Specialized TB service

Indicators of MDR/XDR-TB management

Indicator	World	WHO EURO Region	the Russian Federation
Coverage by Rapid DST	31%	53%	73%
Total coverage by DST -New TB cases -Retreatment cases	 46% 83%	 91% 93%	 88% 95%
Coverage by MDR/XDR-TB treatment	69%	84%	99%
Treatment success rate	56%	57%	54%
	Target indicator -75%		
Treatment success rate for XDR-TB cases	39%	39%	38%

Conclusions

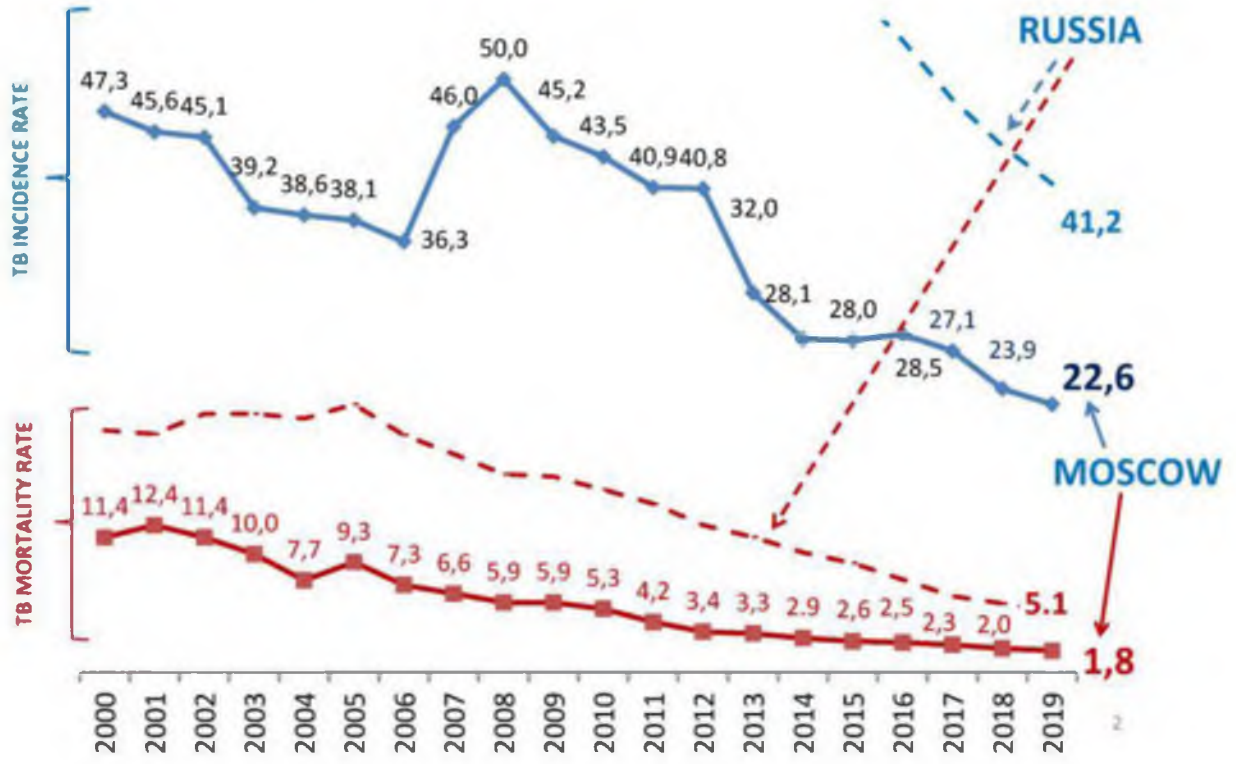
- The Russian Federation is MDR-TB high level country;
- Proportion of TB cases with MDR-TB among all new TB cases comprised 33,1 % in 2019;
- High level of XDR-TB: 11% out all new MDR/RR-TB cases and 25,9% out all MDR-TB retreatment cases;
- The Russian Federation has developed laboratory network for TB detection and DST preparation;
- All TB cases are examined by microscopy, Mbt DNA detection, culture, and DST;
- MDR-TB monitoring is provided by Federal electronic System – Federal electronic TB Register;
- All MDR-TB patients receive MDR-TB treatment free of cost.

- Russia: ***M.D. Evgeny Belilovskiy "Study on the Spread of Tuberculosis with Drug Resistance of the Pathogen to Various Anti-Tuberculosis Drugs using Molecular Genetic Methods among the Permanent and Migratory Population of Moscow"***

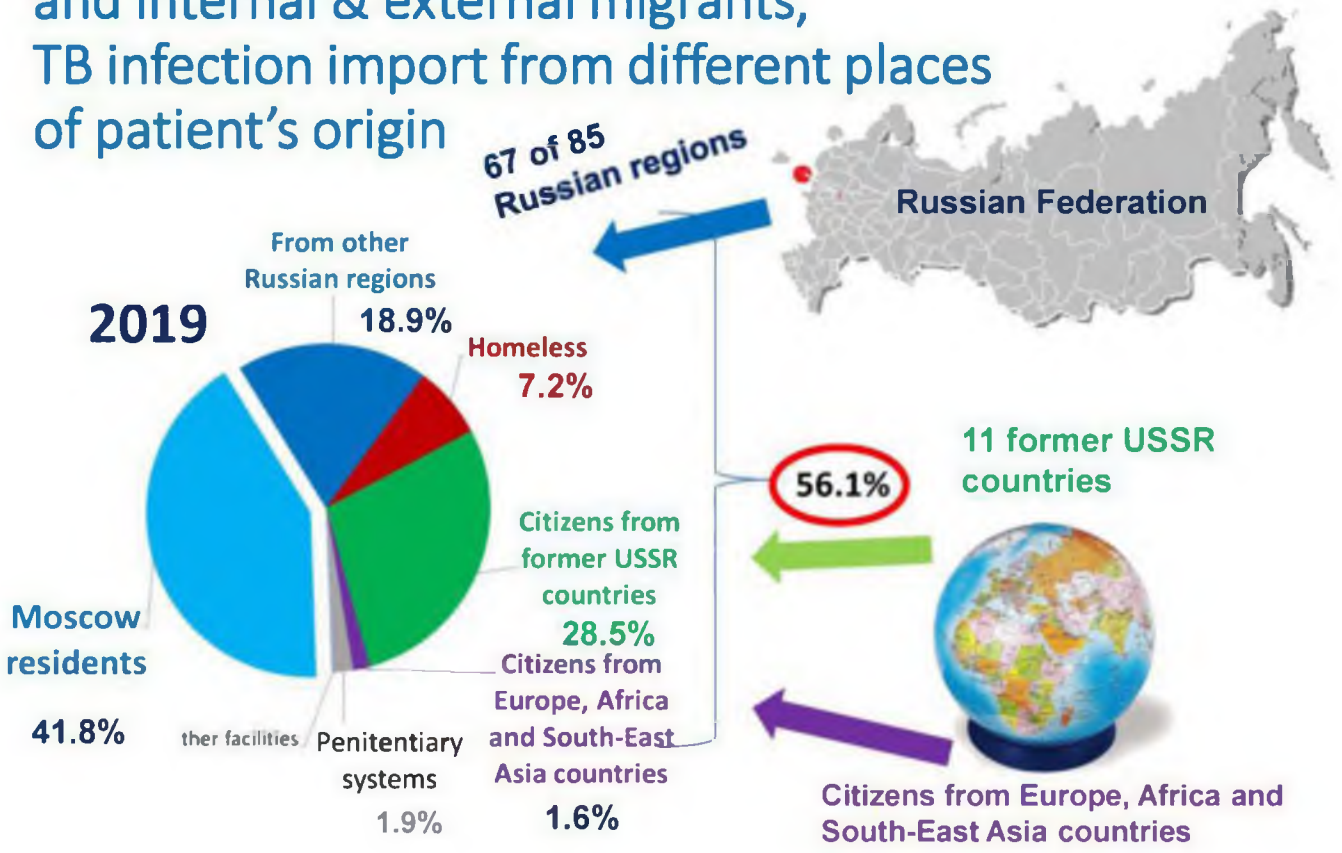
Study on the spread of TB with drug resistance of the pathogen to anti-TB drugs in permanent and migratory population in Moscow, using phenotypic and molecular genetic methods

Evgeny Belilovskiy,
Head of TB surveillance department,
Moscow Research and Clinical Center for TB Control
Moscow Department of Health

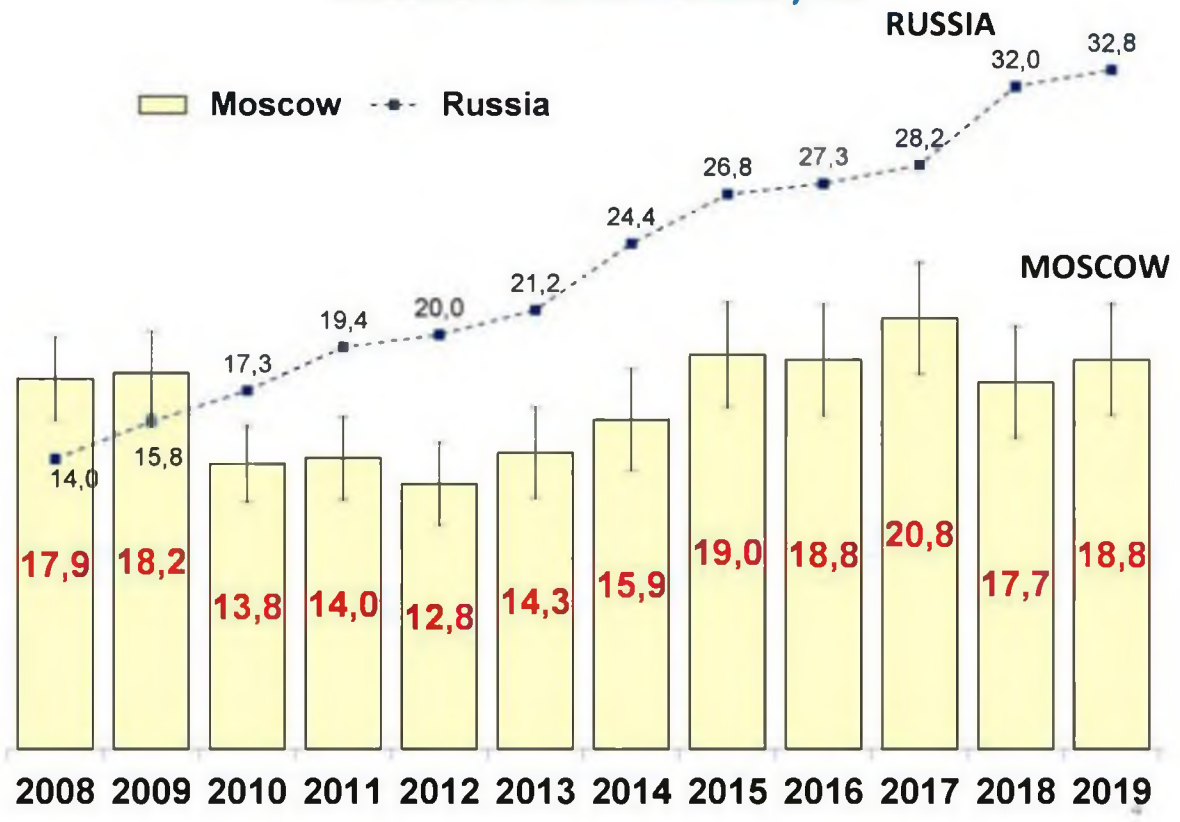
TB mortality and TB incidence rates Moscow and Russia, per 100K population



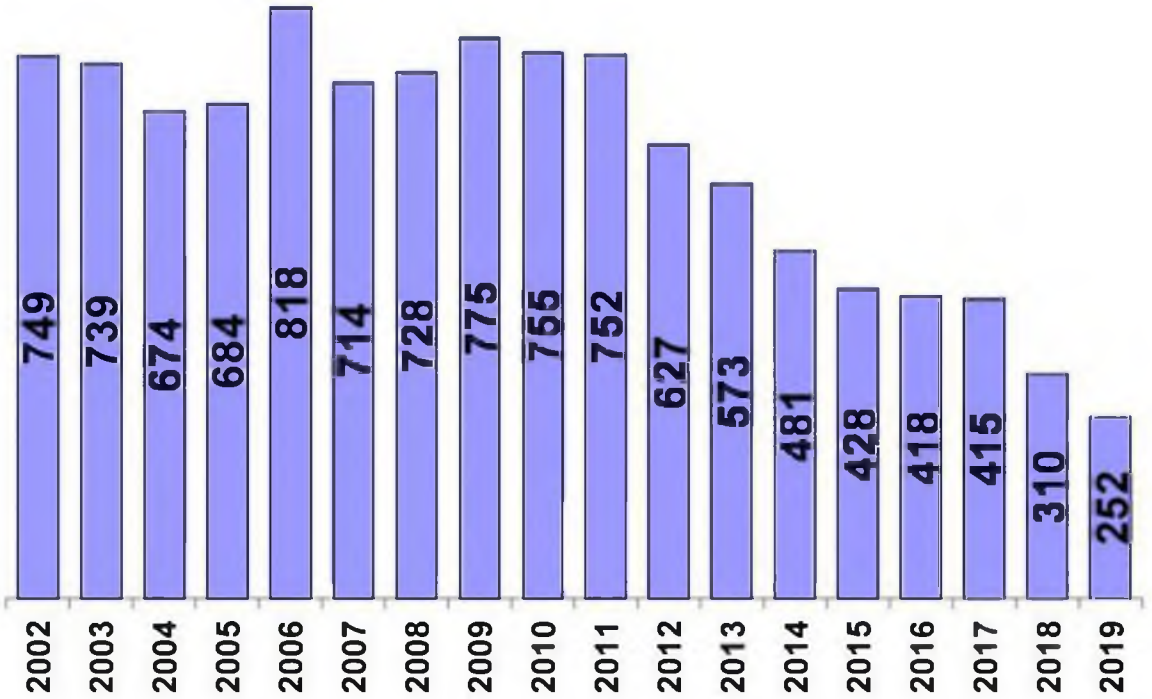
TB in Moscow: residents and internal & external migrants, TB infection import from different places of patient's origin



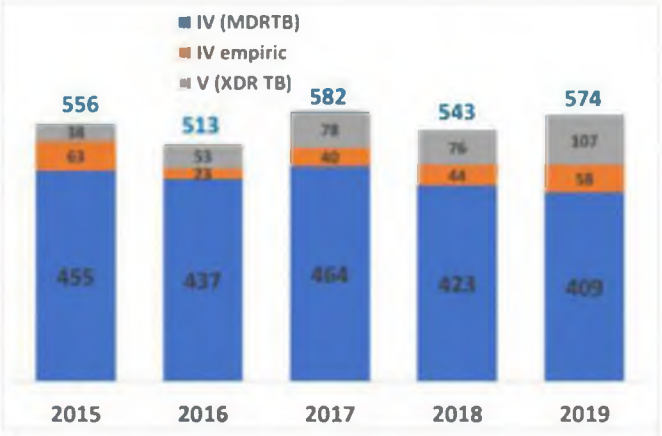
Proportion of MDR-TB in pulmonary new TB cases Moscow and Russia, %



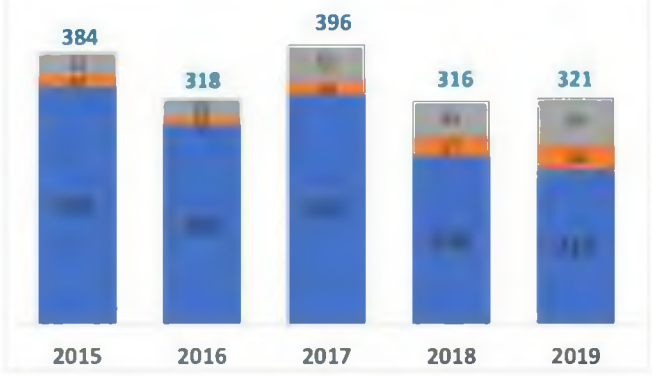
MDR-TB patients in follow up register in Moscow, permanent residents



TB patients in cohorts of treatment as MDR/XDR TB patients, Moscow



All TB patients in Moscow



TB patients among Moscow residents

Moscow TB Control Center participates in in international multicenter clinical trials of new TB treatment regimens and new anti-TB drugs

- Borisov SE, Dheda K, Enwerem M, et al. Effectiveness and safety of bedaquiline containing regimens in the treatment of MDR- and XDR-TB: a multicenter study. Eur Respir J 2017; 49: 1700387
- Regimens in Moscow includes number of new anti-TB drugs: bedaquiline, linezolid, fluoroquinolones etc


Effectiveness and safety of bedaquiline-containing regimens in the treatment of MDR- and XDR-TB: a multicentre study

Success of MDR/XDR TB treatment can be strong depend on
- access to rapid molecular DST methods and their correct interpretation,
- access to data about anti-TB drug resistance pattern in population,
because not less than half on TB patients (in Moscow) have not DST information due to bacteriological negative test results, but part of them had contacts with MDR/XDR TB patients.

Drug resistance survey in Moscow

- **Two main subjects of Moscow DRS on the current stage**
  - **To study the relationship between phenotypic** *M. tuberculosis* **drug resistance (PhDR) and mutations of genes of MTB (as markers of the PhDR),** which is an essential for the prompt selection of the treatment regimen
  - **To study the anti-TB drug resistance pattern in different strata of Moscow population, based on representative samples of TB patients**

Drug resistance survey in Moscow

- Primary requirements
  - Phenotypic and genotyping laboratory methods of DST approved by WHO and/or authorized and approved in Russia
  - Epidemiological and laboratory registers data integration
  - Representative samples include all or most of registered new TB cases and selected re-treatment cases
  - Date of sampling – before date of the first dose of treatment course (important for new TB cases and TB relapses)
  - Decomposition on residents, internal migrants (Russian regions), external migrants (Central Asia countries, Europe countries, others)
- Type of studies
  - Objective 1: Retrospective studies using local Moscow biobank of TB strains
  - Objective 2: Prospective or cross-sectional study

Laboratory Methods

- BactecTM MGITTM 960 (Becton Dickinson, USA) using Middlebrook 7H9 liquid nutrient medium. DST was performed using critical concentrations recommended by WHO in 2008
- "TB-BIOCHIP" (BIOCHIP-IMB LLC, Russia), which allows detection of *M. tuberculosis complex* DNA and determination of 27 mutations in the *rpoB* gene (resistance to RIF), 9 mutations in the *katG* gene, 5 in the *inhA* gene and 5 in the intergene region *ahpC* / *oxyR* (resistance to INH).
- "TB-BIOCHIP-2" (BIOCHIP-IMB LLC, Russia), which allows the detection of *M. tuberculosis complex* DNA and the determination of 9 types of mutations in the *gyrA* gene (resistance to fluoroquinolones).
- "GenoType MTBDRsl" (HainLifescience, Germany), which allows the detection of *M. tuberculosis complex* DNA and determine drug sensitivity to fluoroquinolones by analyzing 6 mutations in the *gyrA* gene, as well as aminoglycosides and CPM by two mutations in the *rrs* gene.

Data sources: long-term TB surveillance system in Moscow, which integrates with DST data of TB biobank

- Source of data for TB surveillance register - TB registered and followed up forms, approved by Ministry of Health and Moscow TB Control Center
- TB surveillance database has more 90000 records since 1998, including more than 20000 records for non residents since 2009. Besides TB patients deaths' cases register (TB death both from TB and from other causes, including HIV) operates from 2001 (~10000 cases)
- TB surveillance database includes social-demographics data, diagnostics information, TB treatment history, TB patients follow up, TB treatment outcomes
- Local TB biobank of TB strains, 2014-2019 data

Objective 1: Relationship between phenotypic *M. tuberculosis* drug resistance and mutations of genes of MTB associated with drug resistance

ERS

INTERNATIONAL CONGRESS 2018

Genotypic and phenotypic drug resistance of M.tuberculosis in patients registered in Moscow, Russia
M. Krasnova, E. Belilovsky, A. Khakhalina, S. Borisov, S. Safonova, E. Nosova
ERS International Congress 2018

Gene mutation and drug resistance of M. tuberculosis in the patients followed up in the city of Moscow
Krasnova M.A., Belilovsky E.M., Borisov S.E., Khakhalina A.A., Mikhaylova Y.D., Nosova E.Y. Tuberculosis and Lung Diseases. 2019;97(12):34-44. (In Russ.)
https://doi.org/10.21292/2075-1230-2019-97-12-34-4

Retrospective study based on TB surveillance register and local TB strains biobank data, to define:

(1) shares of different mutations among DR patients depend on social and demographic characteristics,
(2) probability of DR depend on different mutations,
(3) the prevalence of these mutations among different groups of patients

Methods

- Molecular and phenotypic tests of 685 strains collected in 2014 from 685 adult new and re-treatment TB patients, registered in all 12 Moscow administrative units (~1 mln. of population for each), were considered. The sample was representative enough.
- Analysis included data about mutations in 315, 335 codons of *kat*G gene and in *ihn*A 15 for isoniazid (H), in 531, 526, 516 and 511 codons of *rpo*B gene for rifampicin (R), in 90, 91 and 94 codons of *gyr*A for fluoroquinolones (Fq), mutations *in rrs* gene for amikacin (Am), kanamicin (K) and capreomycin (Cap)

Results (1)

The most frequently mutation among DR patients:

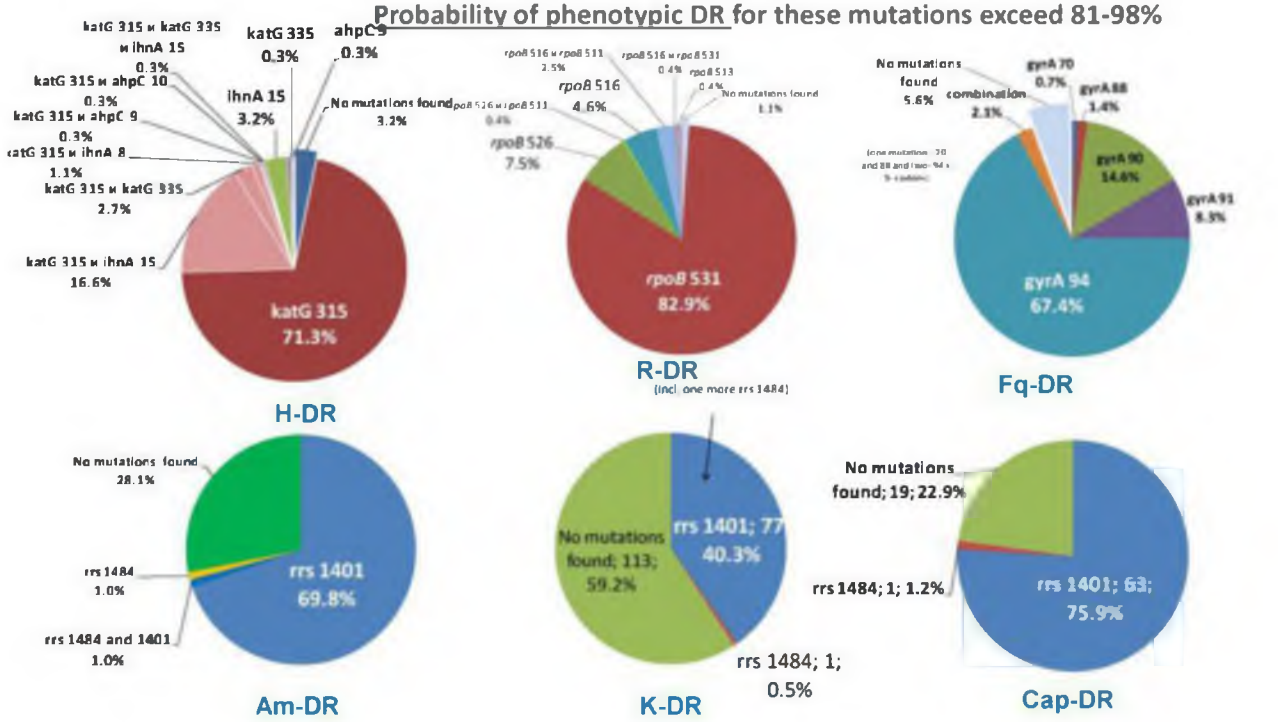
in H-DR pts was in 315 codon of *kat*G - 92.5% (95%CI: 89.2-94.9),

in R-DR pts was in 531 codon of *rpo*B - 83.2% (78.3-87.4),

in Fq-DR pts was in 94 codon of *gyr*A - 68.8% (60.5-76.2)

in Am-, K- and Cap-DR was in 1401 codon of *rrs* – 70.8%, 40.3% and 75.9%

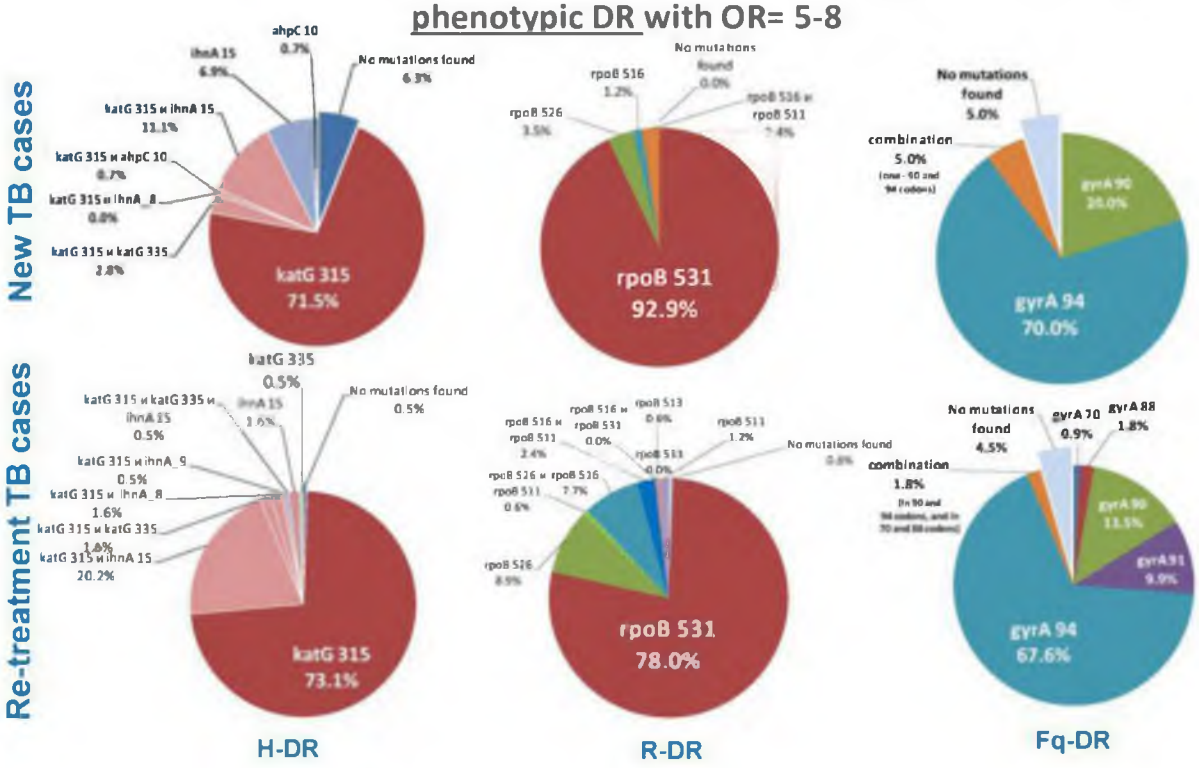
Probability of phenotypic DR for these mutations exceed 81-98%



Results (2)

Previous treatment had a most significant effect on the variety of mutations determining phenotypic DR to H, R, Fq and Amg/Cap,

and on the presence of both studied mutations and phenotypic DR with OR= 5-8



Conclusions from first (retrospective) stage of DRS

- Rapid molecular tests can fully replace phenotypic tests in routine practice. Probability of phenotypic drug resistance for DR marker mutations exceed 81-98%.
- Previous treatment had a most significant effect on the variety of mutations determining PhDR to H, R, Fq and Amg/Cap, and on the prevalence of both studied mutations and PhDR.

Objective 2: Prospective DRS in Moscow population

- The study of the relationship between socio-demographic factors and DR of new TB cases in metropolis with a significant proportion of non-permanent population will contribute to an adequate choice of treatment regimens
- Sub-objectives:

(1) To characterize DR in new TB cases in Moscow.

(2) To assess the relationship of socio-demographic factors and DR in new TB cases.

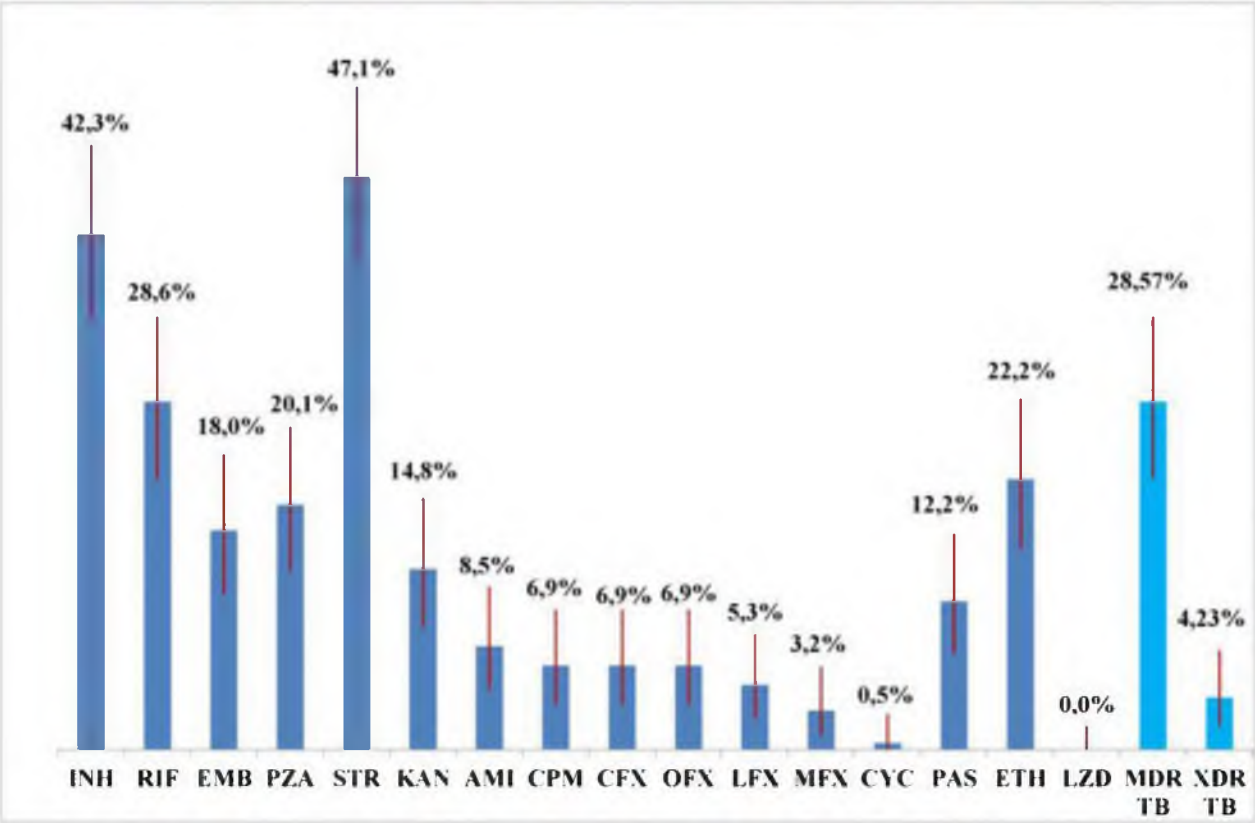
Socio-demographic factors and drug resistance of M. tuberculosis in patients registered in megapolis
A. Chizhova , S. Safonova , Y. Mikhajlova , M. Krasnova , A. Khakhalina , I. Peretokina , E. Belilovsky ,
ERS International Congress, Madrid, 2019 (on English)
Tuberculosis and social diseases, 2019, N 3, p. 4-13 (on Russian)

Methods

- DST and molecular tests to first- and second- line drugs for **189 strains of *M. tuberculosis*** **isolated from all 189 new TB cases** who were registered in 6 months of 2017 in 5 of the 12 districts of Moscow.
- DST for **isoniazid (INH), rifampicin (RIF), streptomycin (STR), ethambutol (EMB), pyrazinamide (PZA), kanamycin (KAN), amikacin (AMI), ofloxacin (OFX), moxifloxacin (MXF), capreomycin (CPM), levofloxacin (LFX), cycloserine (CYC), PASK (PAS), ethionamide (ETH), ciprofloxacin (CFX), linezolid (LZD).**
- **TB detection, TB diagnosis and socio-demographic characteristics** of patients were taken from the **TB surveillance register**. A group of people with "limited social activity" (unengaged) included unemployed people of working age, retired and disabled people.
  - 189 patients included in the study: 125 (66.1%) permanent residents of Moscow, 35 (18.5%) arrived from other regions of the Russian Federation, 5 (2.6%) homeless, 22 (11.6%) citizens of the countries of the former USSR and 2 (1.1%) citizens of other countries.
  - They also included: 68.8% men, 51.9% unemployed, 31.2% patients had a permanent job, 10.6% retired, 3.7% disabled and 2.6% (5 people) - students of secondary and higher educational institutions. 20.6% (39 people) were TB/HIV patients. The median age was 40 years with an IQR= 32.0-51.0.

Results

Resistance of *M. tuberculosis* to different anti-TB drugs



The relationship of socio-demographic factors with phenotypic resistance to anti-TB drugs, OR

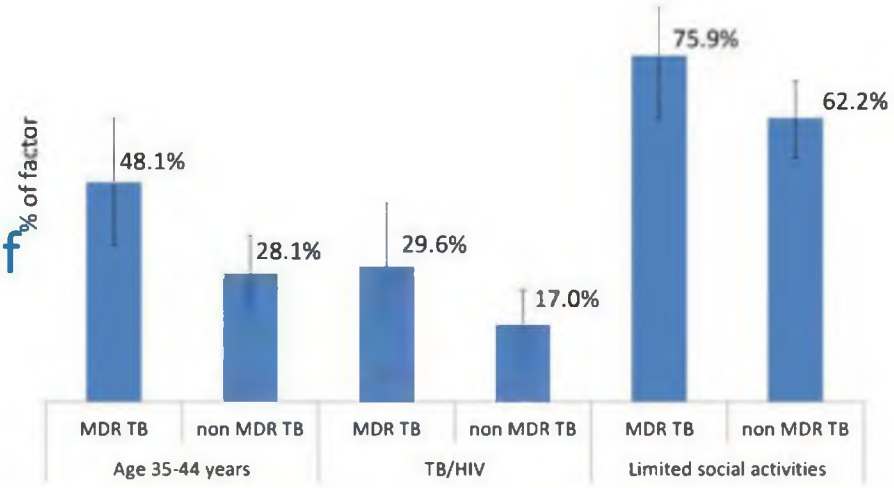
Anti-TB drugs	Age groups, OR (95%CI)		
	18-27	28-37	35-44
RIF	0,0919 (0,012-0,70)	p > 0,1	2,37 (1,23-4,55)
EMB		2,20 (1,02-4,72)	p > 0,1
PZA		p > 0,1	p > 0,1
ETH		2,46 (1,20-5,01)	p > 0,1
MDR-TB	0,09 (0,01-0,70)	p > 0,1	2,3703 (1,23-4,55)
XDR-TB		4,25 (0,98-18,43)	p > 0,1

Anti-TB drugs	residents/ migrants	working/ unemployed	Limited social activity
	OR (95%CI)	OR (90%CI)	
RIF	p > 0,1	0,54 (0,26- 1,13)	1,91 (1,05-3,49)
PZA	p > 0,1	0,45 (0,19- 1,08)	2,21 (1,09-4,50)
STR	0,52 (0,27 -0,97)	p > 0,1	p > 0,1
MDR-TB	p > 0,1	0,54 (0,23- 1,13)	1,91 (1,05-3,49)

Association with TB/HIV	LFX	OFX	CFX	RIF	PZA	MXF	ETH	MDR-TB	XDR-TB
	OR (95%CI)			OR (90%CI)					
	4,27 (1,17 - 15,57)	3,71 (1,17 - 11,78)	3,71 (1,17 - 11,78)	2,05 (1,11- 3,80)	2,12 (1,08- 4,15)	4,08 (1,03- 16,19)	2,09 (1,09- 4,01)	2,05 (1,11- 3,80)	4,17 (1,25- 13,90)

Factors, associated with MDR-TB

The results of monovariable and multivariate analysis factors, associated with of MDR-TB



Factors	MDR-TB		Non MDR-TB		Monovariable analysis, 95%CI (*90%CI)	Multivariable analysis (95%CI)
	n	% (factor)	n	% (factor)		
Age 35-44 years	26	48,15%	38	28,15%	2,370 (1,234-4,551)	2,131 (1,079-4,209)
TB/HIV	16	29,63%	23	17,04%	2,050 (0,982-4.283); (1,105 -3,804)*	1,446 (0,669-3,212)
Limited social activity	41	75,93%	84	62,22%	1,915 (0,937-3.912); (1,051-3.487)*	1,741 (0,833-3,640)

Socio-demographic factors and mutations responsible to phenotypic resistance

- Largest share of mutations in the *rpoB* gene was detected in the **age group 35-44 years** - 47.4% (95% CI: 34.0-61,0%, $p = 0.0099$), while in the **age group of 18-27 years** this mutation is significantly less common than in other ages - 1.8% (95% CI: 0.04-9.4%, $p = 0.00167$) or one case
- **Limited social activity** is associated with the presence of mutations in the *rpoB* gene ($p = 0.0758$). Patients with **limited social activity** were 75.4% (95% CI: 62.2-85.9%) among those with a mutation in the *rpoB* gene. And in the group without mutations in the *rpoB* gene, patients with limited social activity were 62.12 % (95% CI: 53.3-70.4%)
- The share of patients from **other regions of the Russian Federation** with mutations in the *katG* gene equal to 26.4% (95% CI: 16.7-38.1%) was significantly lower ($p = 0.0412$) compared with the resident population and **citizens of the countries of the former USSR** - 73.6% (95% CI: 61.9-83.3%)

Conclusions

- The obtained DRS results reflect the TB drug resistance pattern, common in various segments of the population of the city with a high pressure of internal and external migration.
- The study results can be used to ensure the rational use of first- and second-line anti-TB drugs for TB treatment, to develop evidence-based algorithms for choosing empirical treatment regimens
- Rapid molecular tests can fully replace phenotypic tests in routine practice with a high reliability
- Epidemiological and laboratory registers data integration is a key factor of DRS success
- Regional DRS should be carried out on a regular basis

- THANK YOU!

International Conference of Experts from the Russia Federation and the ASEAN member states

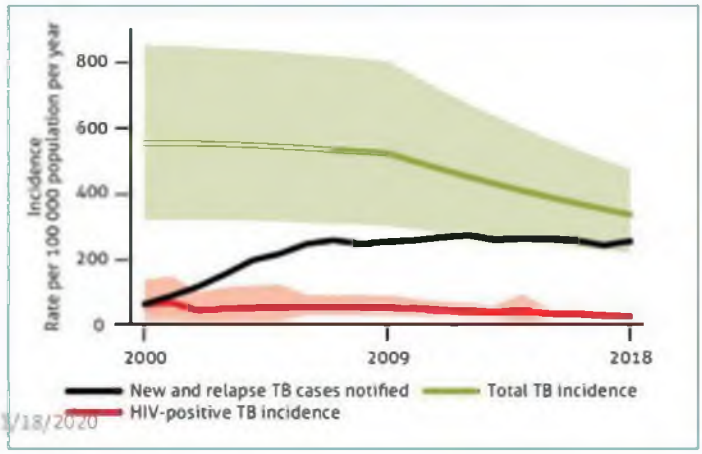
National response to TB management & control in Myanmar

Dr. Nang Saung Kham
Assistant Director (TB/Leprosy)
Eastern Shan State,MOHS, Myanmar
16th-17th .11.2020

TB Burden and Trend – in Myanmar (2018)

Source: Global TB Report 2019

2018	Number (K)	Rate (/100K)	Ranking among WHO SEARO countries
TB Incidence	181 (119-256)	338 (222-477)	3rd
TB/ HIV + Incidence	15 (10-22)	29 (19-41)	1st
MDR (RR) TB incidence	11 (7.4-16)	21 (14-30)	1st
HIV (-) Mortality	21 (12-31)	39 (23-58)	3rd
HIV (+) Mortality	3.7 (2.5-5.2)	6.9 (4.6-9.7)	



Annual Decline of Incidence: 4.9%
Case Notification Gap: 24%

Vision, Goal and Objectives on Ending TB in Myanmar

Vision: Myanmar free of TB

Zero deaths, disease and suffering due to TB by 2050

Goal: End TB epidemic in Myanmar

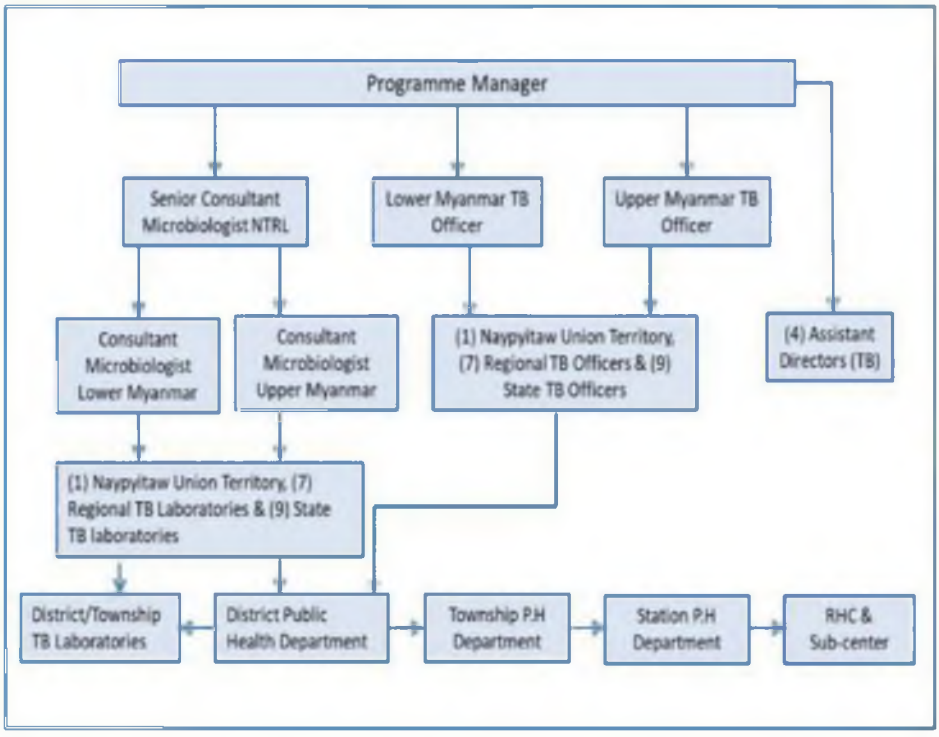
Fewer than 10 cases per 100,000 population by 2035

Objective 1: accelerate the decline in the prevalence of drug-sensitive and drug-resistant TB

Objective 2: fully integrate TB prevention and care in Universal Health Coverage

Objective 3: enhance the prevention of TB, particularly for high-risk populations

National TB Programme structure and staffing



Strength

- Well structured
- Supported by seconded staffs
- Committed staffs at all levels
- New PHS II appointments

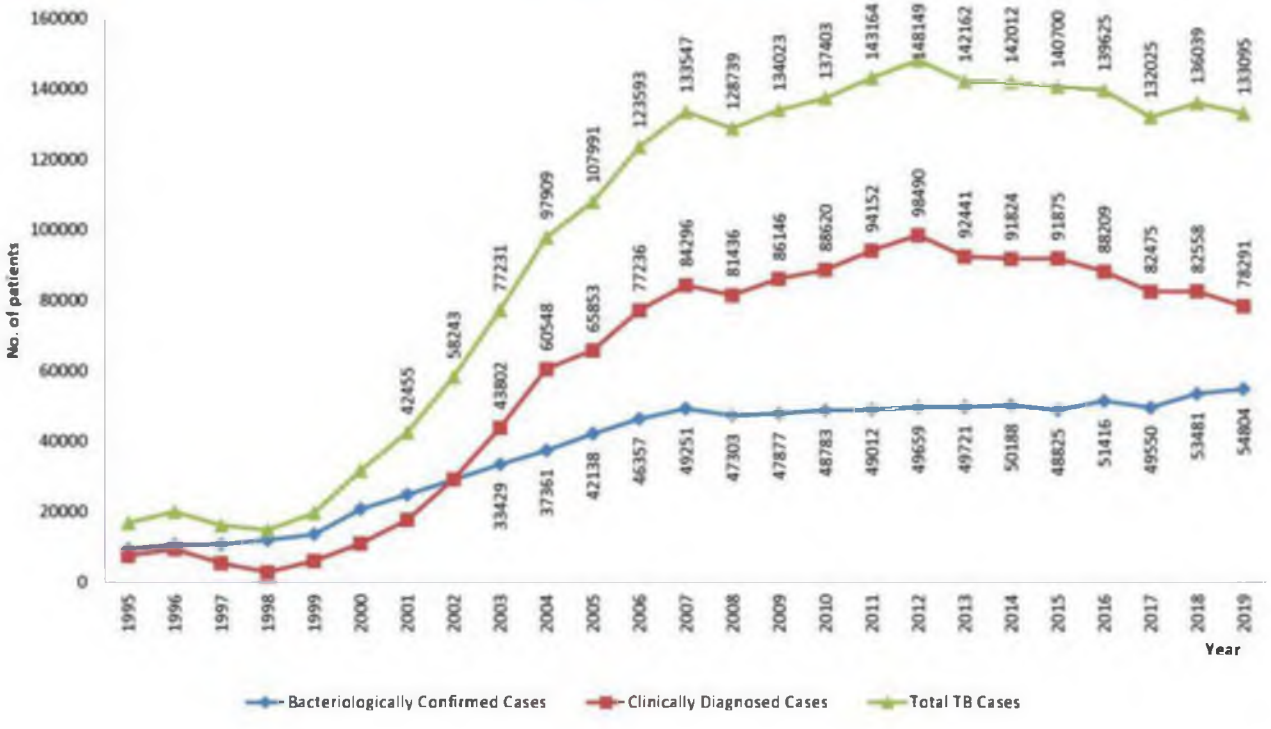
Challenges

- HR limitation *(Only 30% of posts are filled)*
- Depend on seconded staffs in some areas
- High staff turnover

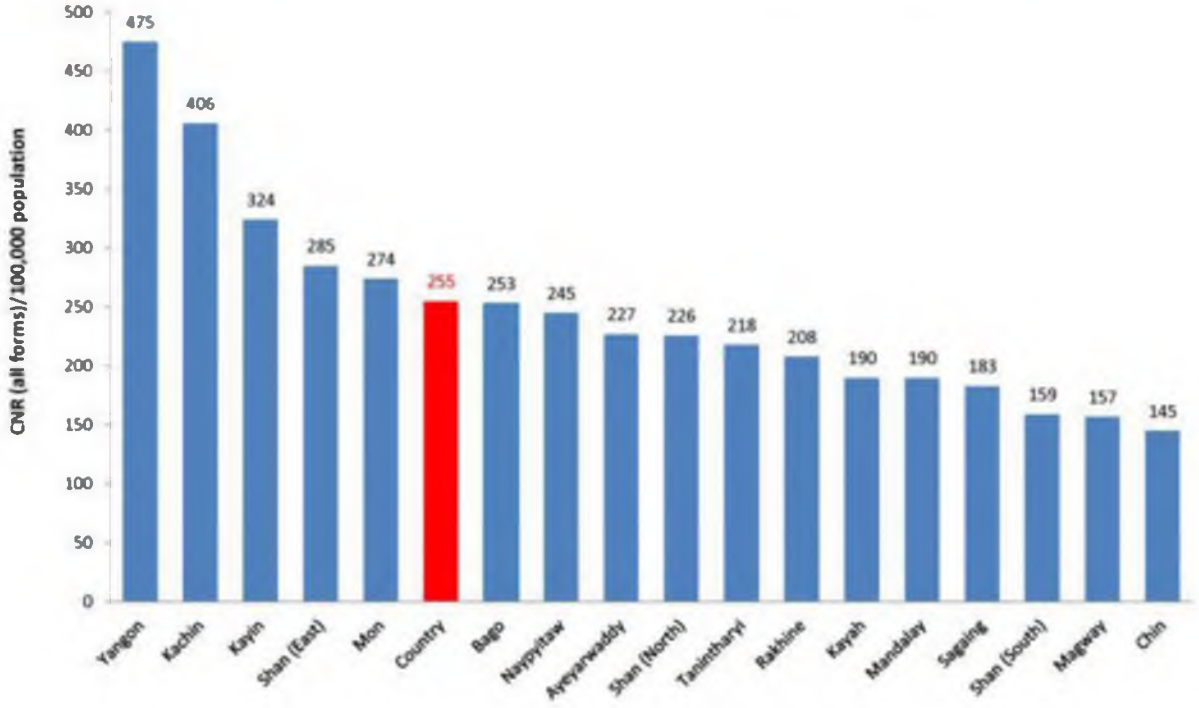
Multisectoral Accountability

- TB is a **priority disease** of the country
- Government **funding** contribution **increased** for TB care & control
- Policy statement on **Mandatory TB Case Notification** by MoHS (24th Sep 18)
- Consultation workshop on **Multi-Sectorial Action to End TB** was conducted with related Ministries, Donors, UN, WHO, EHO & Implementing Partners
- Better **engagement & collaboration with civil society** for TB case finding, case holding & health education
- **Engagement with MMA & Myanmar Private Hospitals Associations** for mandatory TB case notification

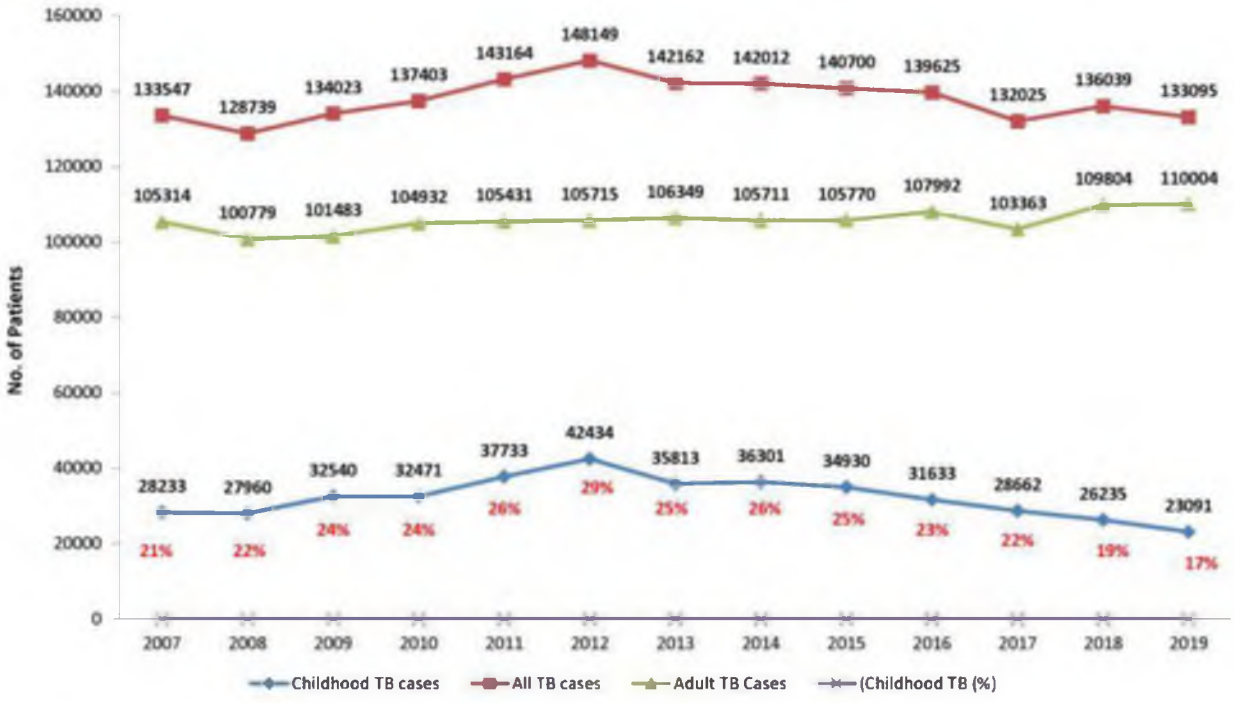
Trend of Total TB Case Notification (1996-2019)



Case Notification Rate(CNR) (all forms) according to States/Regions, 2019

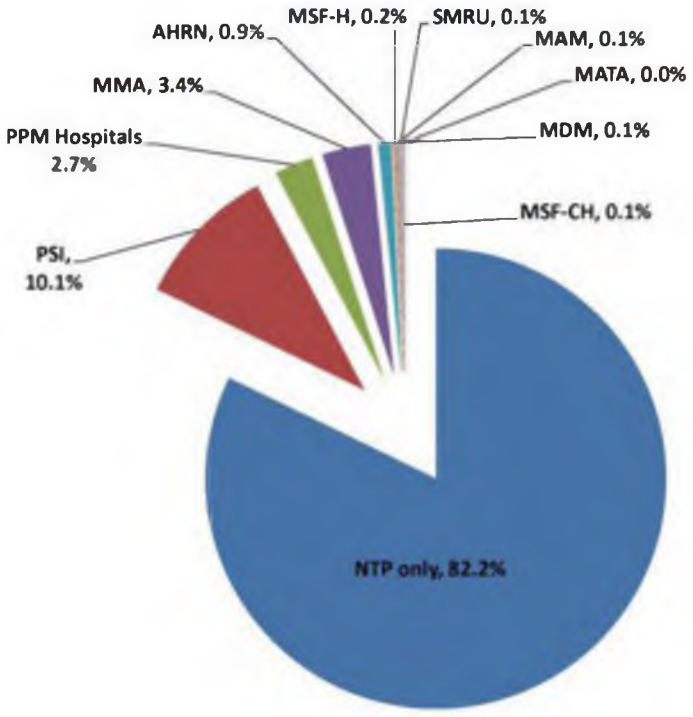


Trend of Childhood TB cases (2007- 2019)

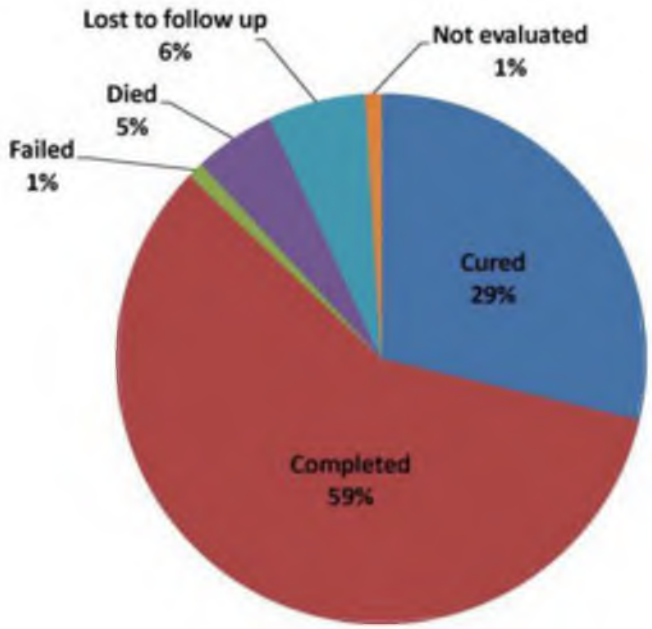


Proportion of Childhood TB cases, 2019

Proportion of Total TB cases contributed by NTP & Other Partner units in 2019 (n=133095)

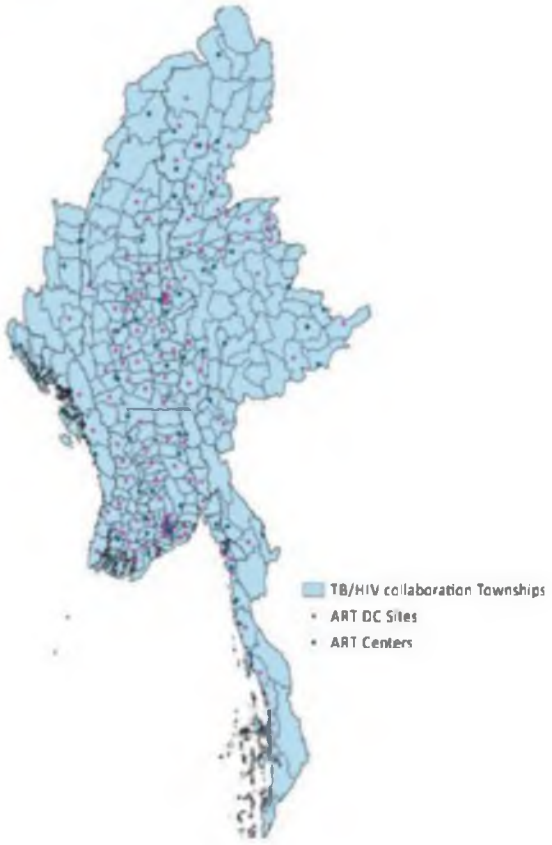


Treatment Success Rate(TSR) (all forms), 2018 Cohort (88%)

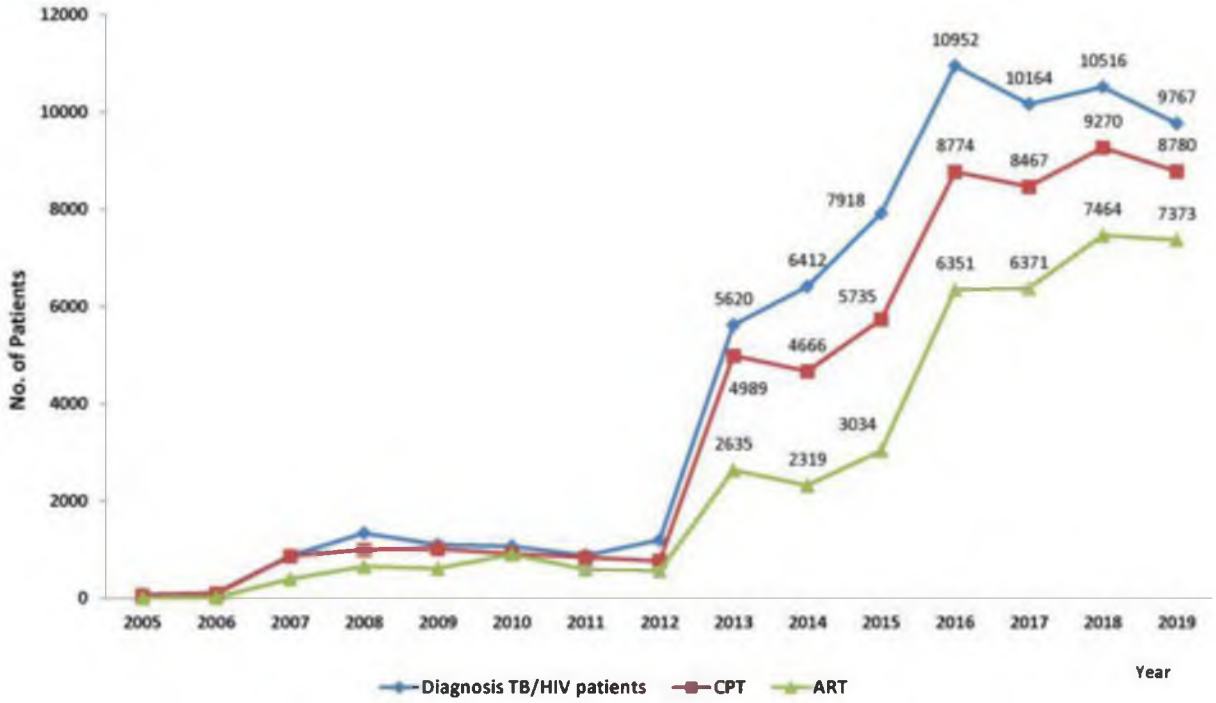


TB/HIV collaborative townships and ART centers/ DC sites

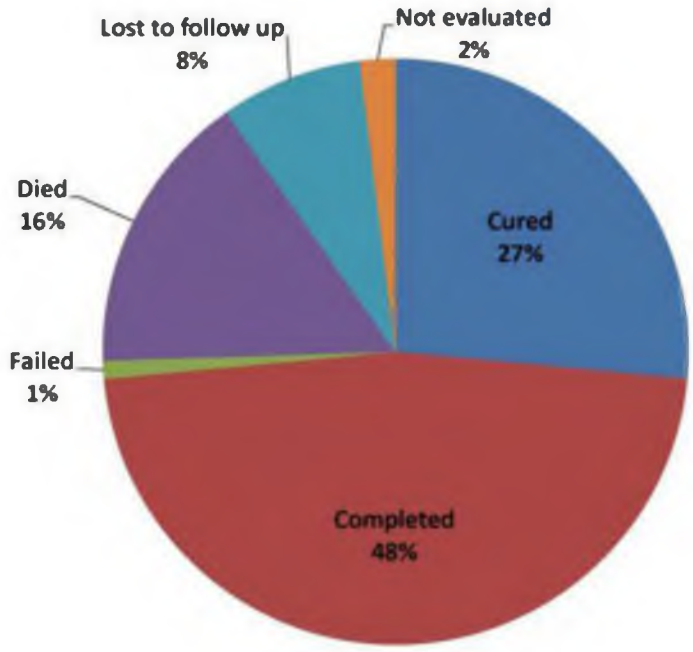
- Initiated in **7 townships** since **2005**
- Gradually expanded to **28 townships** by **2013**
- Scaled up to 108 townships in 2014; covering **a total of 136 townships** in 2014
- Scaled up to 100 townships in 2015; covering a total of **236 townships**
- Scaled up to **94 townships** in 2016; covering all **330 townships** in 2016.



Trend of TB/HIV Collaborative Activities



Treatment outcomes of TB/HIV cases registered in 2018 cohort



TSR 75%

Coverage of TB Diagnostic Services in Healthcare Facilities

- **Microscopy and X-ray**: all townships & some stations levels
- **Microscopy, X-ray & GeneXpert**: all States/Regions, District levels and some high burden townships

- 526 sputum smear microscopy centers (with 158 iLED Fluorescent MS) under EQA system
- 108 machines with GeneXpert MTB/RIF upto now
- 3 Culture/DST Centers (Yangon, Mandalay & Taunggyi)
- 2 Reference Laboratories for 2nd line LPA (Yangon & Mandalay)

Programmatic Management of Drug-resistant TB (PMDT)

Status of uptake of 2019 WHO consolidated guidelines on DR-TB treatment

- Bedaquiline registration is under process with FDA
- Ordered treatment courses: 358 for IFFO; 359 for pre-XDR & XDR; 12 for pediatric; 561 to replace Am intolerance; 107 for patients requiring treatment extension beyond 6 months
- Transition plan to new treatment regimen is under process
- Some Operational Research on shorter treatment regimen is still in process

Best practices

Follow updated WHO's guidelines & recommendations according to local context under National Expert DR-TB committee's Guidance

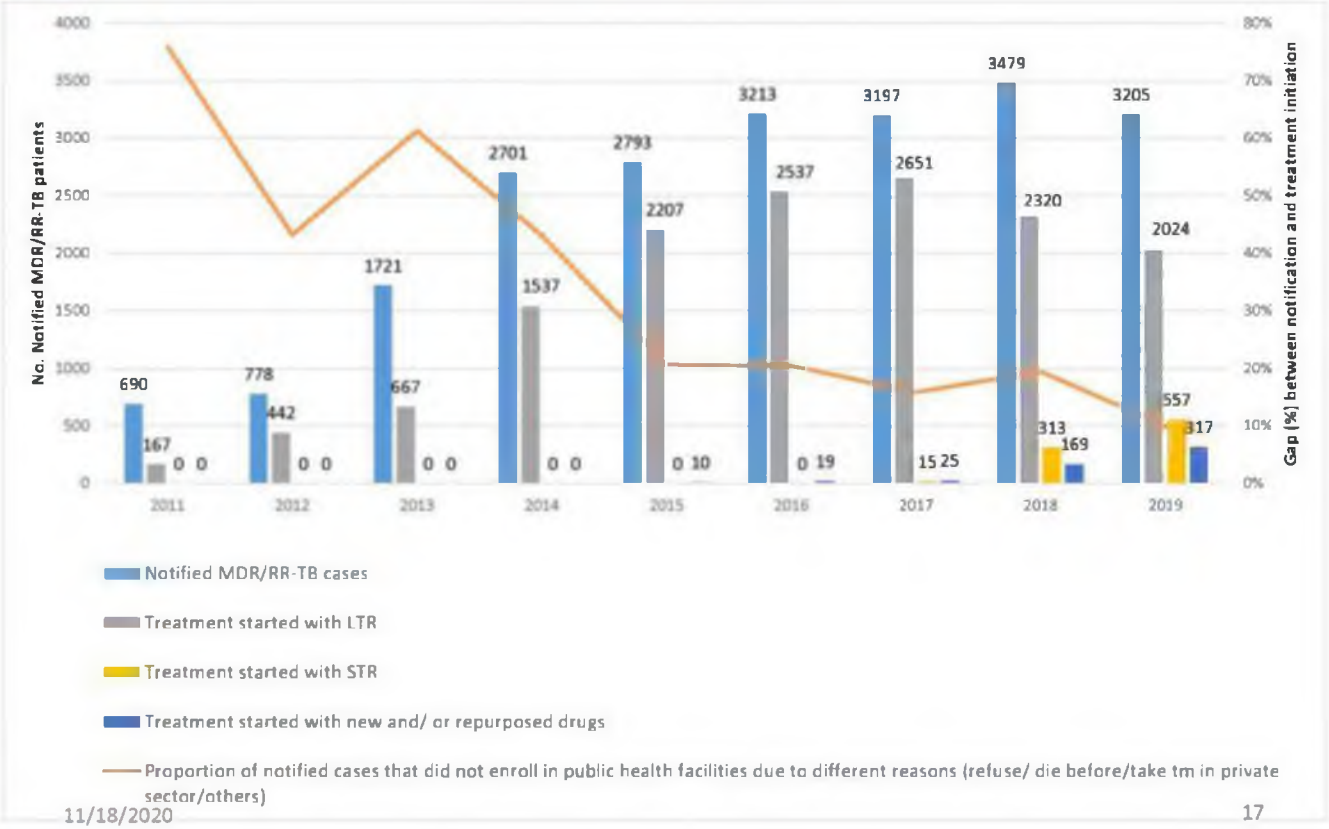
Challenges in PMDT

HR limitation

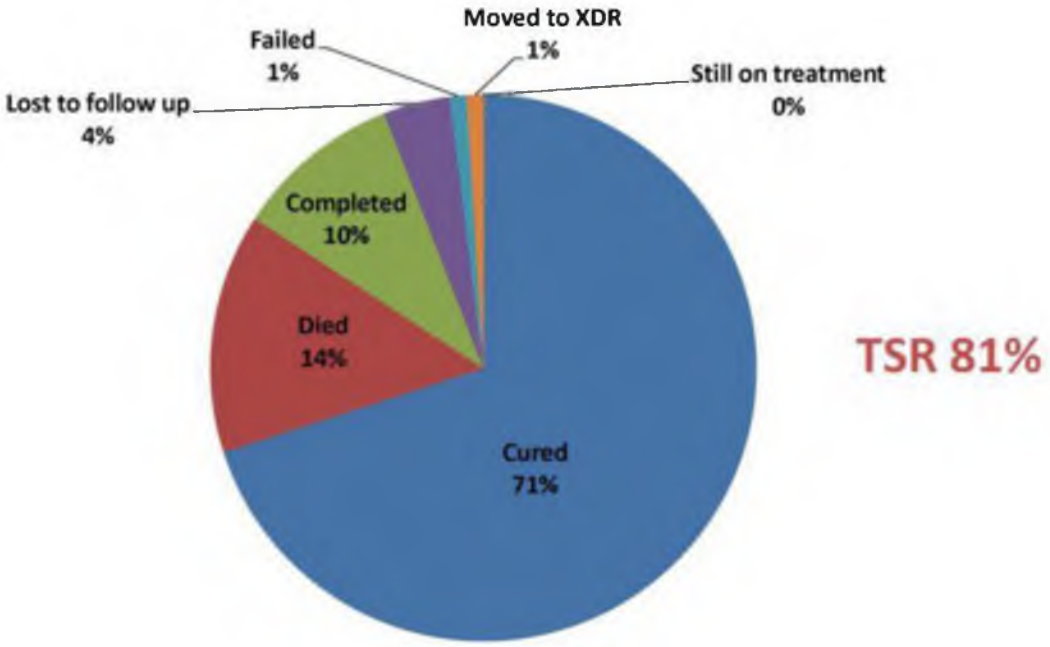
Gap between notified & enrolled MDR-TB pts

Lab capacity & extra infrastructure/maintenance

Comparison of Notified MDR/RR-TB cases and Treatment initiation 2011 - 2019



Treatment outcomes 2017 PMDT cohort n=2621, TSR=81%



TSR 81%

TB Preventive Treatment (TPT)

Target populations

- **PLHIV & child contacts of TB patients (< 5 years)**
- All childhood & household contacts (<35 years) *considered to be expanded in next NSP*

TPT Regimen

- **6H is currently in use**
- Plan to do operational research on 3HP and 3RH *(scale up of these shorter regimens depending on pilot results)*
- Plan to develop national guideline for LTBI

- Usage of CXR before TPT is under consideration
- Consultation meeting for LTBI with NAP, physicians & paediatricians (27th Sept 2019)
- Central level workshop for LTBI (18th Oct 2019)
- TPT among PLHIV: 17.5% (6531/37402) in 2017, 15.5% (5776/37277) in 2018 & 23.6% (4209/17835) in 2019 up to June
- TPT among Under 5 years old: 337 in 2017, 534 in 2018 and 1218 in 2019.

Intensified case-finding and systematic screening

Overall Strategy

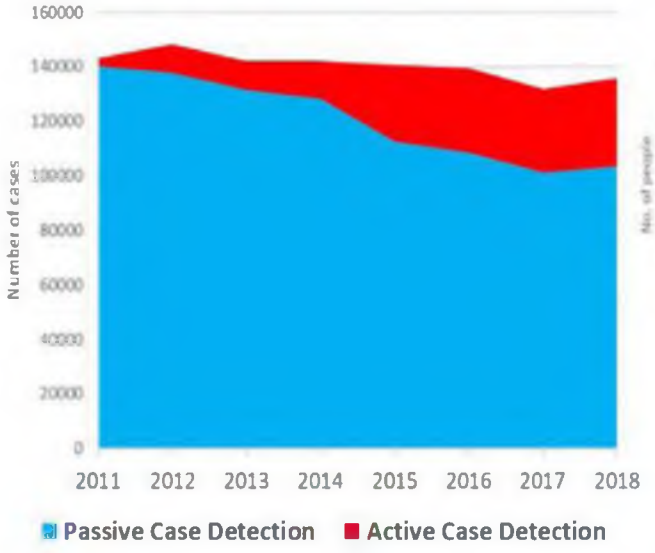
- To strengthen missing TB cases especially in high-risk groups such as migrants, elderly, prisoners, patients with other co-morbidity, etc.

Key Interventions

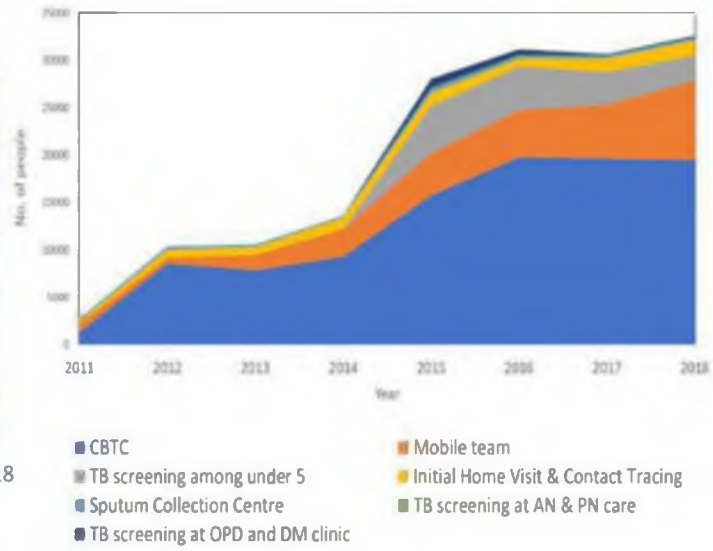
- **Community based TB care**
  - General community, Volunteers from NGOs)
- **Mobile Team activities**
  - Hard to reach area, mobile teams from NTP & NGOs
  - Prison/worksites, mobile teams from NTP
  - Industrial areas and camps, mobile teams from NTP
- **TB/HIV**
  - NTP & NAP
- **TB/DM**
  - NTP & clinic staffs
- **TB screening among AN/PN mothers**
  - MCH staffs
- **TB screening among under 5**
  - MCH staffs
- **Mandatory notification of TB**
  - Non PPM Partners

Key Achievements in finding the missing cases

All forms of TB found by ACD & PCD



Achievement of ACD (2011-2018)



Community and civil society engagement

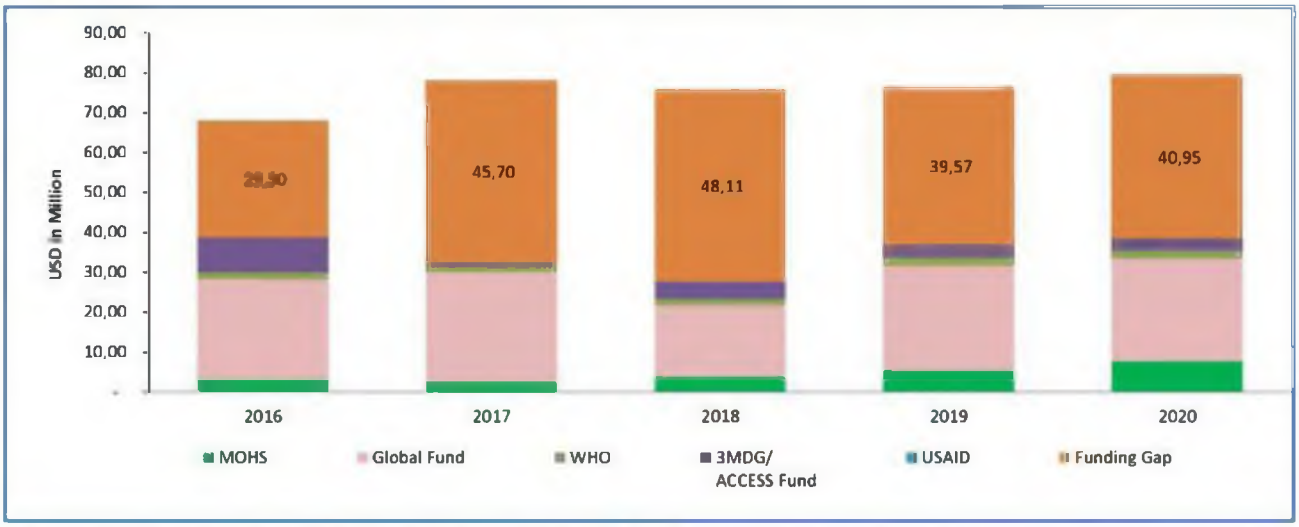
Community-based service delivery

- Among 330 townships, 245 are covered by Community Based TB Care
- Activities carried out by Community volunteers from 11 INGOs, 6 local NGOs and 3 EHOs.
- Malaria volunteers from some NGOs also perform Community Based Activities
- Main activities:
  - Health education & community mobilization
  - Symptoms screening & referral of presumptive TB cases
  - Household contact tracing
  - Treatment support & sputum transportation

Universal health coverage & social protection schemes

- **For All Patients -**
  - BGC vaccination
  - TB diagnosis
  - TB care & treatment (Free of charge)
- **For DR-TB patients -**
  - Monthly incentives,
  - Nutritional support &
  - TA

TB Programme Financing



Opportunities

- Government Funding increased
- New Global Fund concept note is in progress
- Other funding sources

Challenges

- Funding sustainability beyond 2020
- Rely on international funding

National TB monitoring, evaluation & surveillance system

- Dissemination of Prevalence survey results in 2019
- Joint Monitoring Mission in 2019
- 4th National drug resistant survey in 2020
- Plan to conduct patient cost survey in next NSP period
- DS-TB Case-Based Recording & Reporting was piloted in Mon State in 2019
- Plan to expand DS-TB Case-Based Recording & Reporting to all townships in next NSP period

Challenges

- Transition from paper based to electronic based reporting
- Limited number & capacity of HR

National strategy for TB research

- A National TB Research Strategy exists under Strategic Direction 3 of current NSP
- In 2017, National Operational/Implementation research agenda was developed with 8 thematic areas
- International support was the main funding source
- MoHS have started to finance for selected research
- NTP collaborate with Department of Medical Research, WHO & The Union (SORT-IT)
- Among 38 research topics, 22 have been completed

Strength

- Many NTP staffs have been trained under national & international researchers

Challenge

- Staffs are already overloaded with other activities & require additional time to conduct operational research

National Strategic Plan for TB (NSP) 2021-2025

Timeframe

- Draft NSP& Revision (Oct19)
- Stakeholder review of NSP draft (Nov19)
- Operational Plan (Nov19)
- M&E Plan (Nov19)
- Finalization & Costing workshop (Dec19)

Stakeholders

- Departments of MoHS
- Ministry of Home Affair (Prison Health)
- Social Security Board
- Defence Services Medical Academy
- UN & WHO
- LNGOs, INGOs, CSO and CBO
- Donor agencies

Monitor NSP by annual targets according to M&E Plan

Overview of progress, challenges & urgent actions needed to achieve high-level End TB commitments and targets

including 40 million people on treatment & 30 million people on preventive treatment by 2022

Strengths

- Government commitment: Increase funding support
- Mandatory Case Notification: Detect under reported cases
- Accelerated Case Finding Activities: Detect missing cases

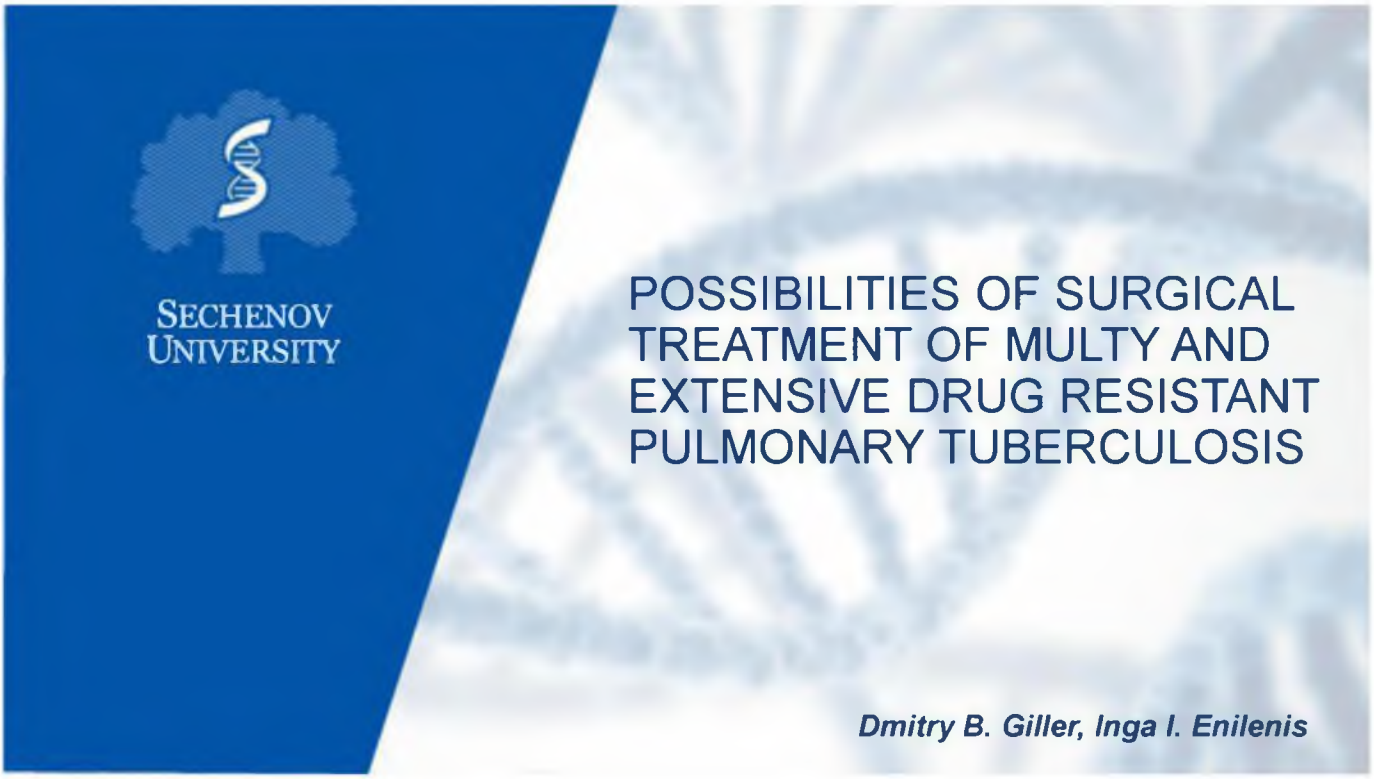
Challenges

- Human Resource Limitation
- Universal DST (Sputum transportation)
- Funding sustainability beyond 2020

Key Actions for 2020

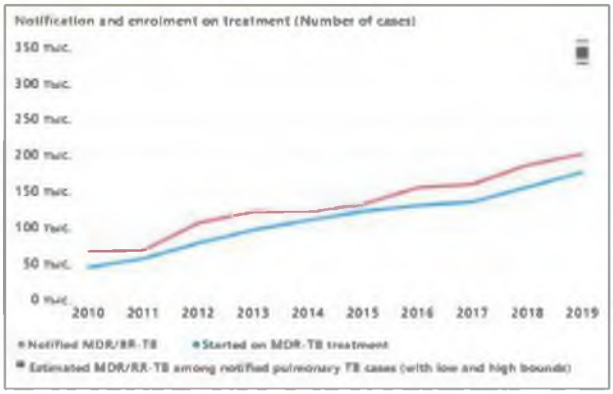
- Decentralization of diagnosis service to Station Hospitals
- Expand X-ray facilities in collaboration with Department of Medical Services
- Introduction of new diagnostic tools: GeneXpert Ultra, TB LAMP after pilot period
- High level advocacy meeting for TPT, New TPT regimen

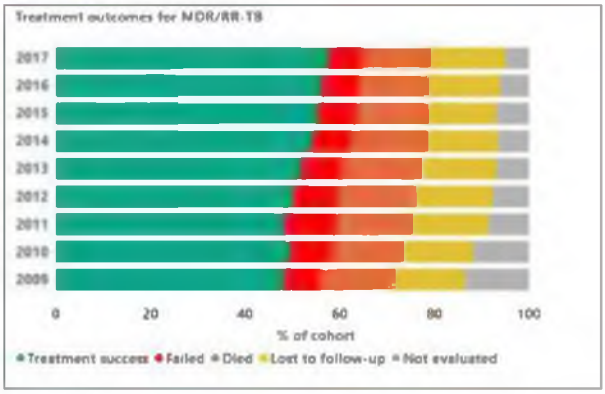
Russia: ***M.D, PhD, Prof. Dmitrii Giller and M.D, PhD. Inga Enilenis "Possibilities of Surgical Treatment of MDR/XDR Pulmonary Tuberculosis"***



Diagnosis, notification and treatment of rifampicin-resistant TB (MDR/RR-TB)

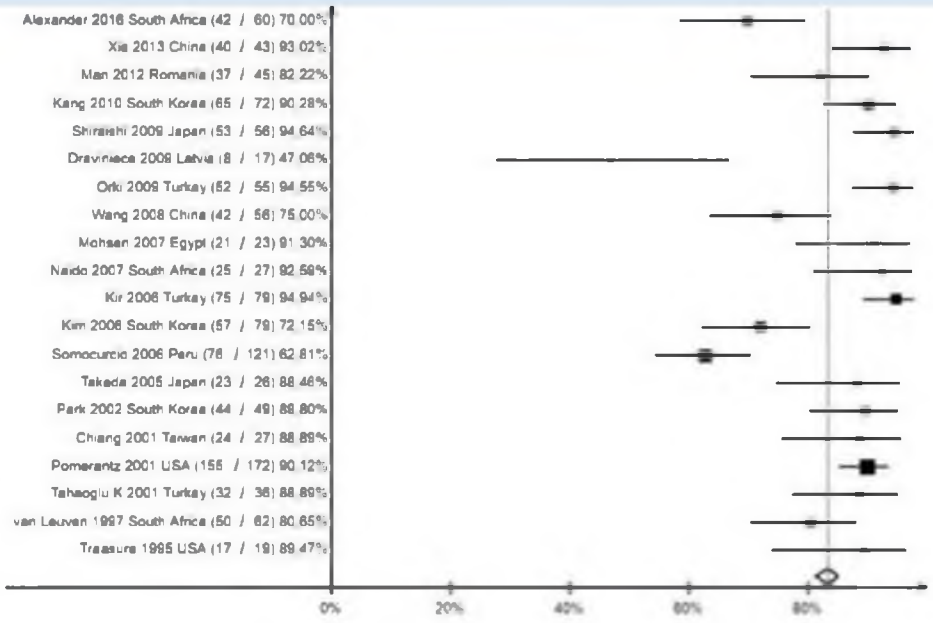
[Global Aggregate]





Generated: 15 November 2020 Sourse: www.who.int/tb/data

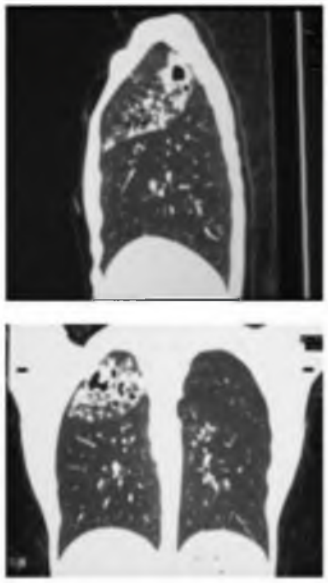
Favorable Outcome Rate (surgical treatment of MDR TB)



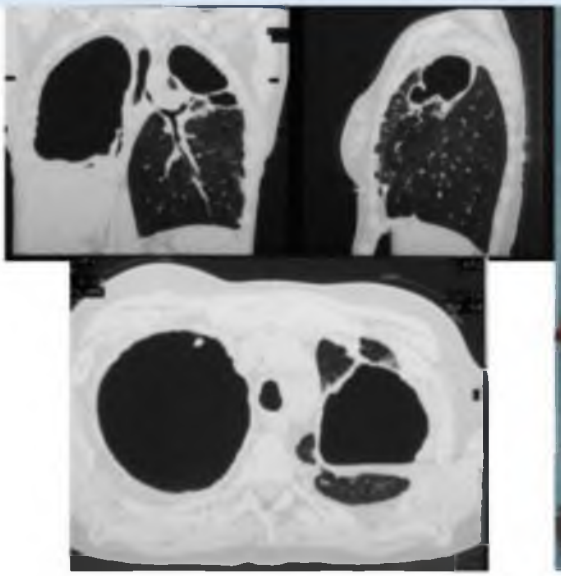
Patient data

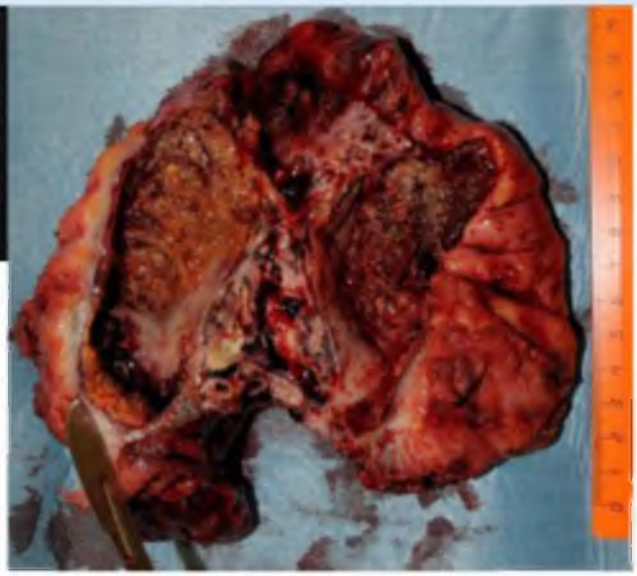
	MDR TB (n = 469)	XDR TB (n = 273)	Total (n = 742)
Male (n = 489)	309 (65.9)	180 (66.0)	489 (65.9)
Age 39 and younger (n = 521)	334 (71.2)	187 (68.5)	521 (70.2)
Fibro - cavitary pulmonary tuberculosis (n = 500)	273 (58.3)	227 (83.3)	500 (67.4)
Cavernous tuberculosis (n = 56)	46 (9.8)	10 (3.6)	56 (7.5)
Caseous pneumonia (n = 19)	14 (3.1)	5 (1.8)	19 (2.6)
Tuberculoma (n = 146)	122 (26.0)	24 (8.8)	146 (19.7)
Tuberculous empyema as an isolated clinical form of TB (n = 12) as a complication (n = 131)	8 (1.6) 71 (15.1)	4 (1.5) 61 (22.2)	12 (1.6) 131 (1.7)
Cirrhotic pulmonary tuberculosis (n = 5)	5 (1.0)	0 (0)	5 (0.7)
Cancer + Tuberculosis (n = 4)	1 (0.2)	3 (1.0)	4 (0.5)
Sputum AFB positive (n = 659)	399 (85.1)	260 (95.5)	659 (88.8)
Complications of pulmonary tuberculosis (n = 670)	410 (87.5)	260 (95.5)	670 (90.3)
Duration of preoperative chemotherapy from 1 to 3 years (n = 530)	297 (63.4)	233 (85.5)	530 (71.4)

Cachexia 244 patients (32.9%)
[XDR 39.9%, MDR 28.8%]

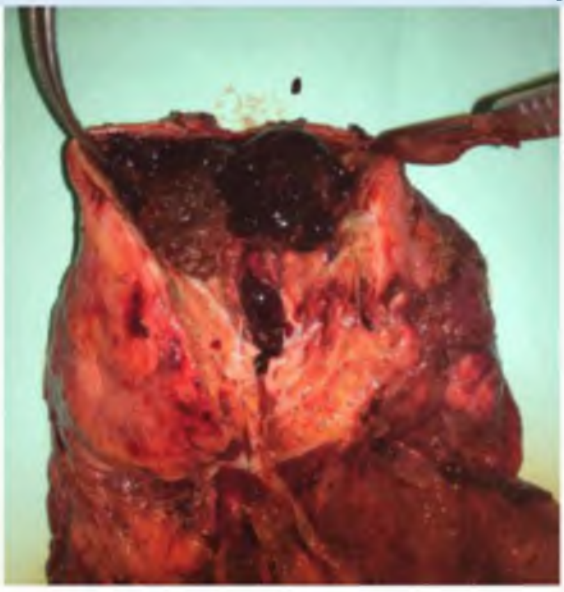


Empyema as a complication131 patients (17.7%)
[XDR 22.2%, MDR15.1%]

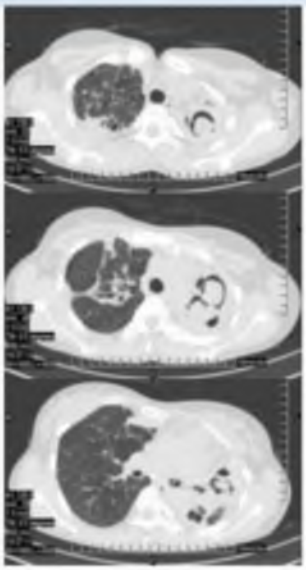


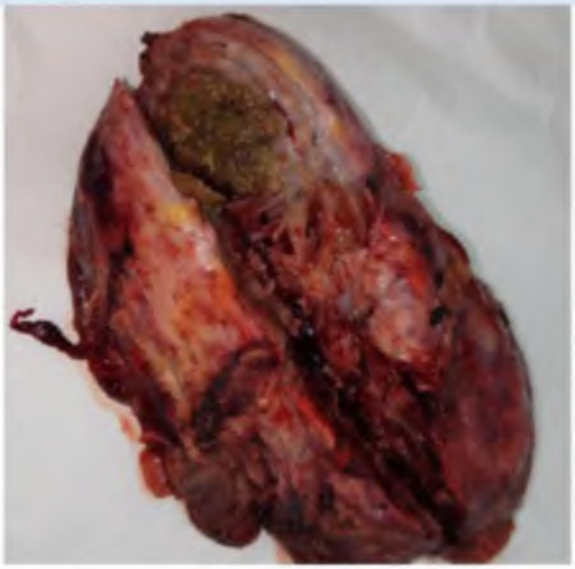


Lung bleeding 64 patients (8,6%)
[XDR 6.3%, MDR 10.0%]



Aspergillosis 8 patients (1.1%)
[XDR 1.0%, MDR 1.2%]





Current indications for surgical treatment of pulmonary TB (WHO, 2014)

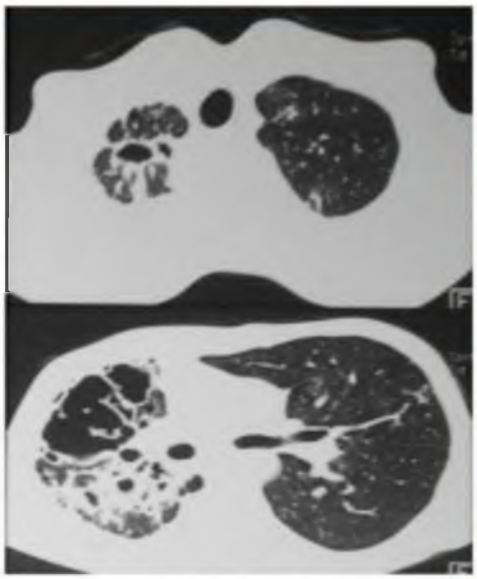
World Health Organization Europe

The role of surgery in the treatment of pulmonary TB and multidrug- and extensively drug-resistant TB

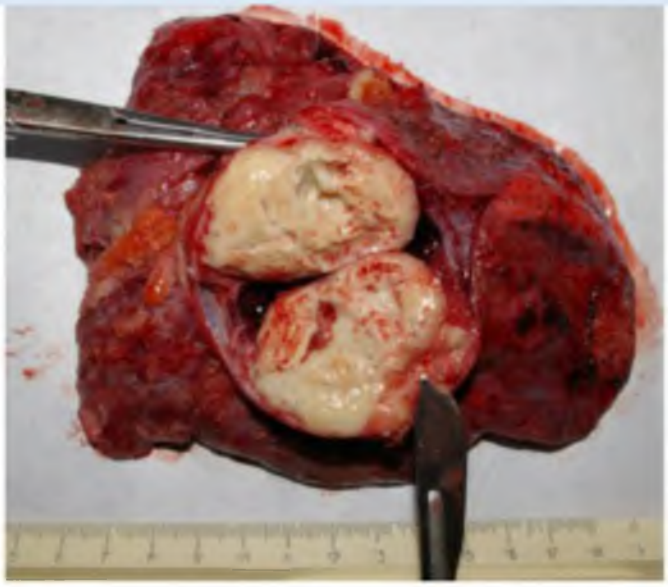
- **Emergency indications**
  - profuse lung haemorrhage
  - tension spontaneous pneumothorax
- **Urgent indications**
  - irreversible TB progression, despite adequate anti-TB chemotherapy
  - recurrent haemoptysis that cannot be stopped by other treatment methods
- **Elective indications**
  - cavitary TB with continuous M. tuberculosis excretion confirmed by bacteriological examination and DST after four to six months of supervised antiTB chemotherapy
  - MDR / XDR-TB characterized by failure of anti-TB chemotherapy
  - complications and sequelae of the TB process (including M/XDR-TB), including: spontaneous pneumothorax and pyopneumothorax, pleural empyema with or without bronchopleural fistula, aspergilloma, nodular-bronchial fistula, broncholith, pachypleuritis or pericarditis with respiratory and blood circulation insufficiency, post-TB stenosis of trachea and large bronchi, symptomatic and chronic post-TB bronchiectasis
  - other indications such as the elimination of complications of previous surgery

Fibro-cavitary TB 500 patients (67.4%)
[XDR 83.3%, MDR 58.3%]

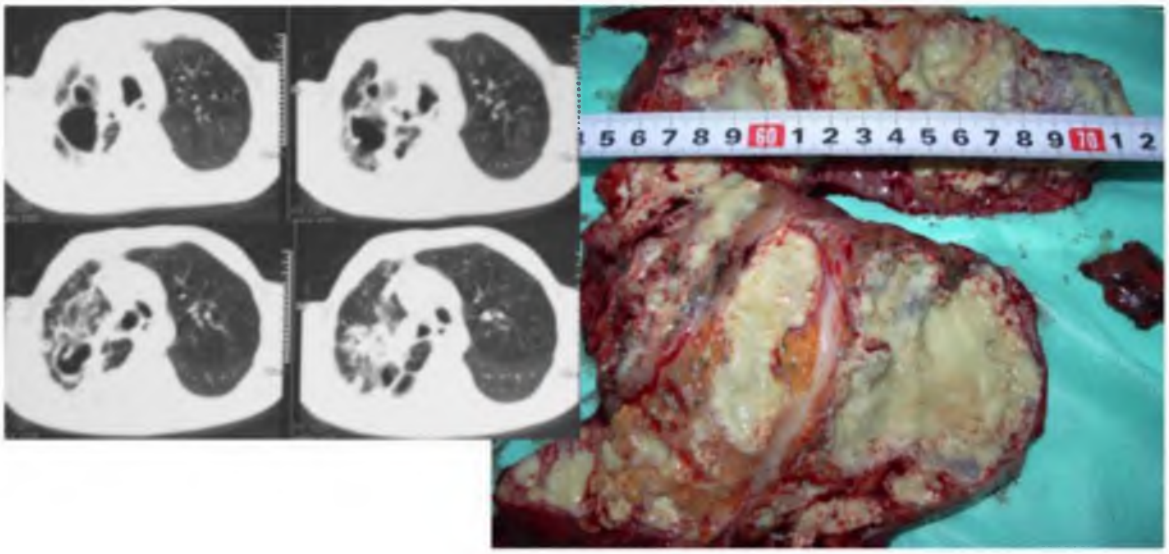
Sechenov University



Tuberculoma 146 patients (19.7%)
[XDR 8.8%, MDR 26.0%]

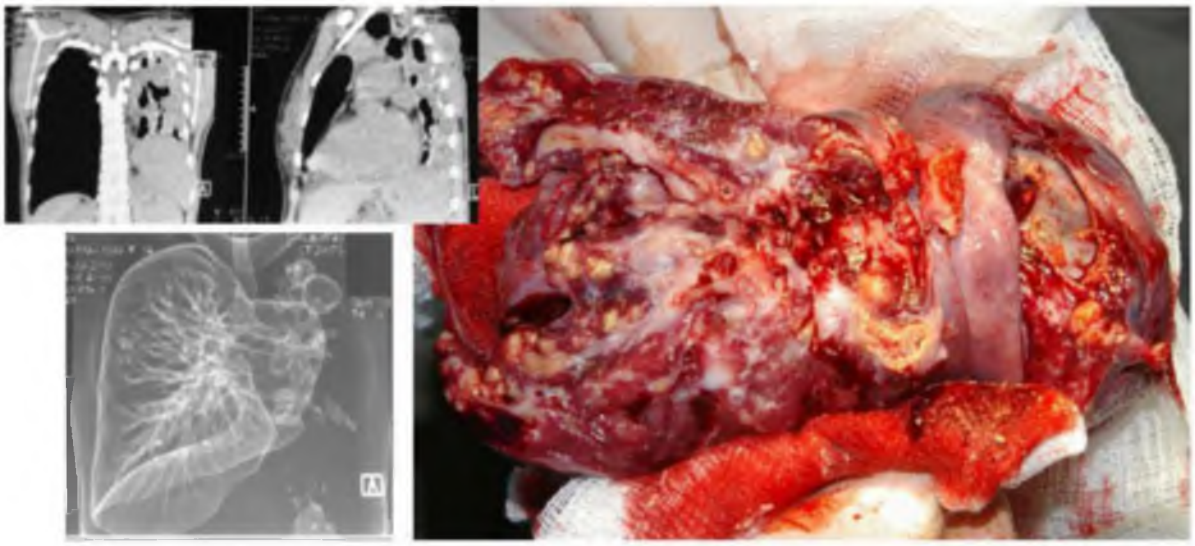


Caseous pneumonia 19 patients (2.6%)
[XDR 1.8%, MDR 3.1%]



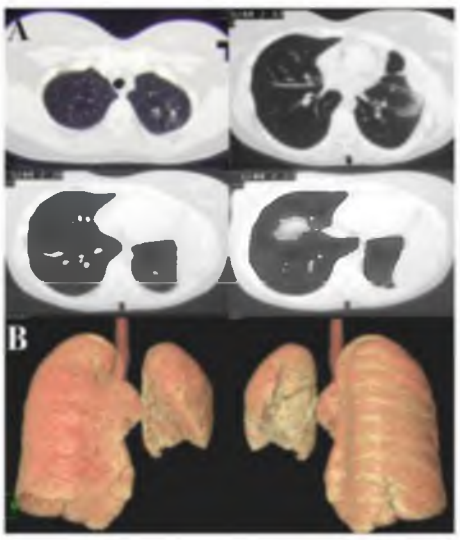
Tuberculous cirrhosis 5 patients (0.7%)

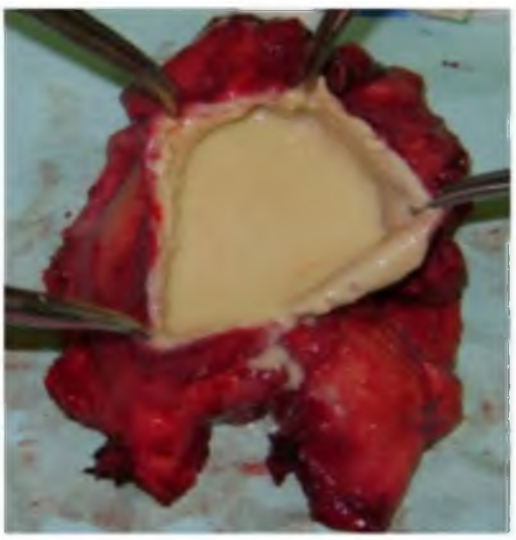
[XDR 0%, MDR 1.0%]



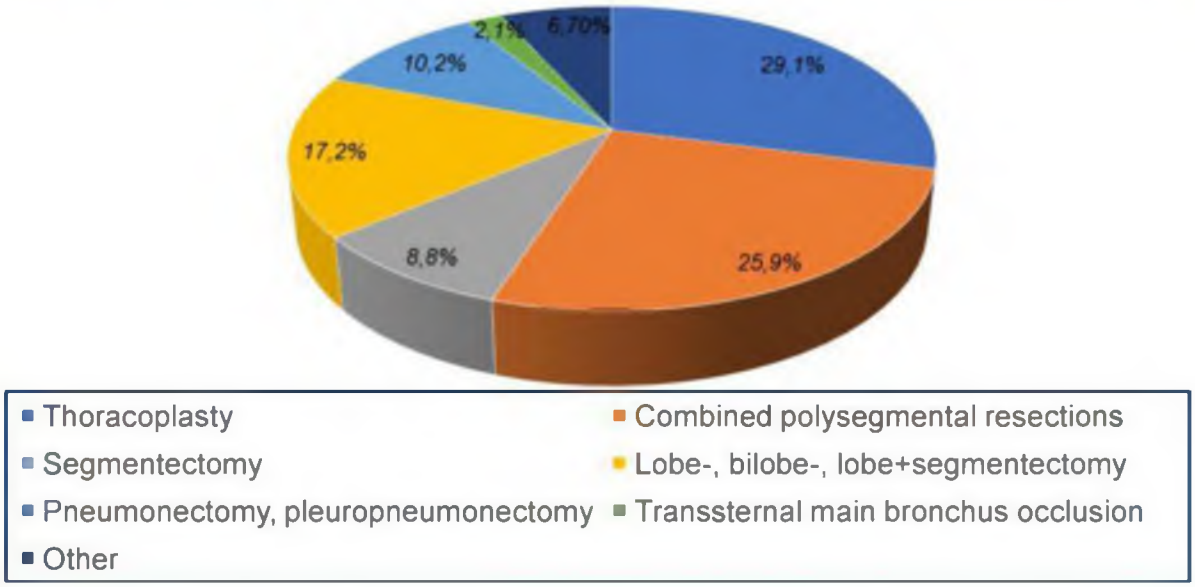
Tuberculous empyema

as an isolated clinical form of TB - 12 (1.6%) [XDR 0%, MDR 1.0%];
as a complication - 131 (17.7%) patients [XDR 22%, MDR 15.1%]





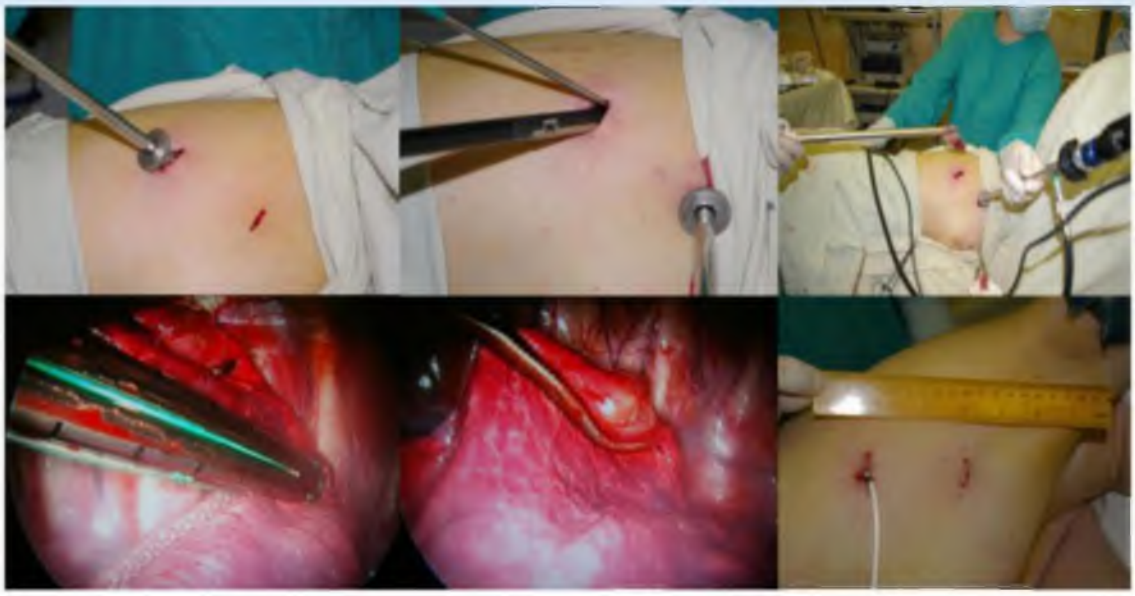
Surgery Volume



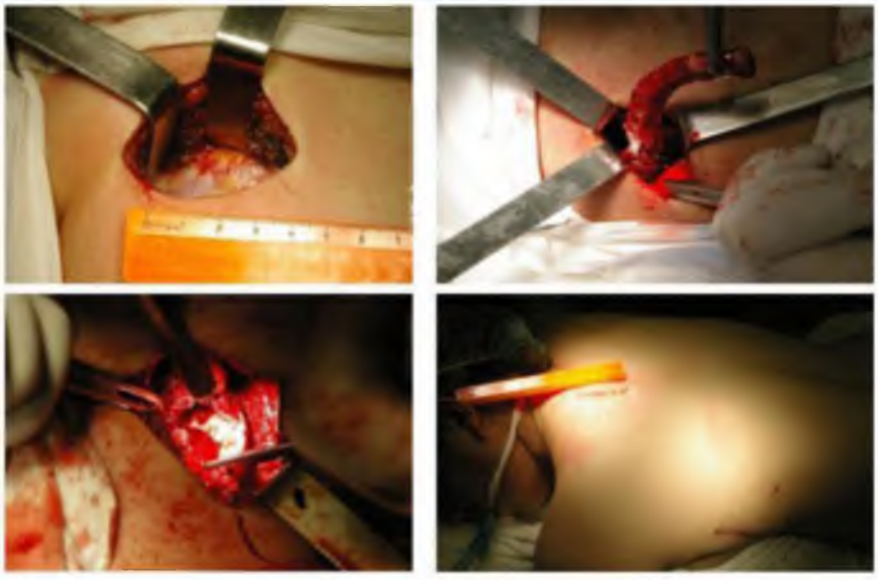
Some technical features of operations performed

- Video assisted miniinvasive access (VATS pneumonectomy rate was 47% of all pneumon- and pleuropneumonectomy; VATS resections rate was 56,6% of all resections; over 90% of thoracoplasty were video assisted)
- Extensive resections were combined with collapse surgery techniques as thoracoplasty, extrapleural pneumolysis with extrapleural cavity sealing
- Separate root element processing was performed in all pneumon-, lobe, bilobectomy, polysegmental and combined resections.
- In pneumonectomy main bronchus was manually sutured with D.B. Giller technique
- In case of macroscopic mediastinal lymph nodes alteration selective mediastinal lymphadenectomy was performed

Video assisted miniinvasive access



Extensive resection combined with collapse surgery techniques as VATS thoracoplasty

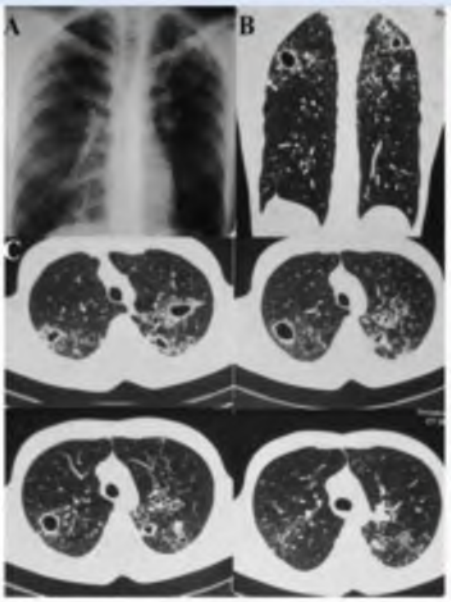


Bilateral extensive pulmonary resections combined with collapse surgery techniques (bilateral VATS thoracoplasty)

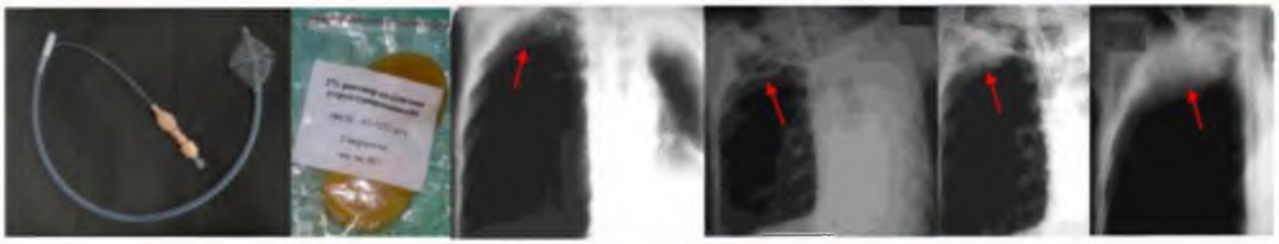
THE ANNALS OF THORACIC SURGERY

Article in Press

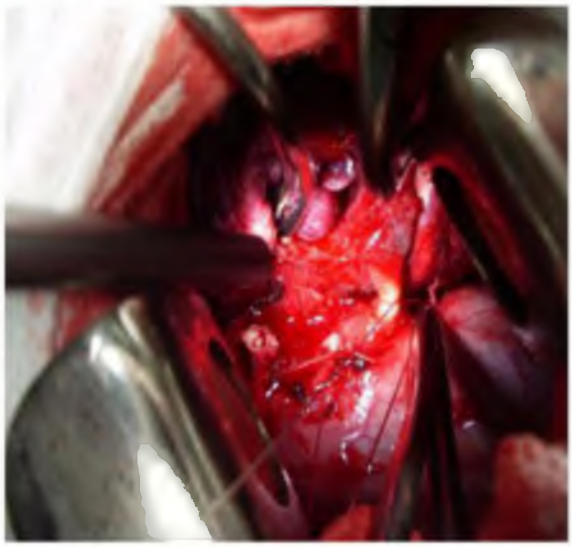
Case of Video-Assisted Thoracoplasty Application in Pulmonary Tuberculosis Treatment



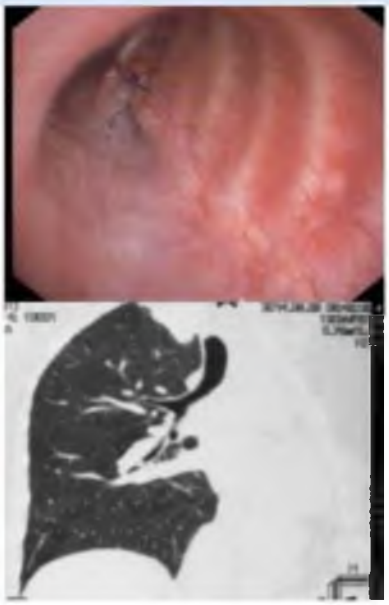
VATS extrapleural pneumolysis with extrapleural cavity sealing



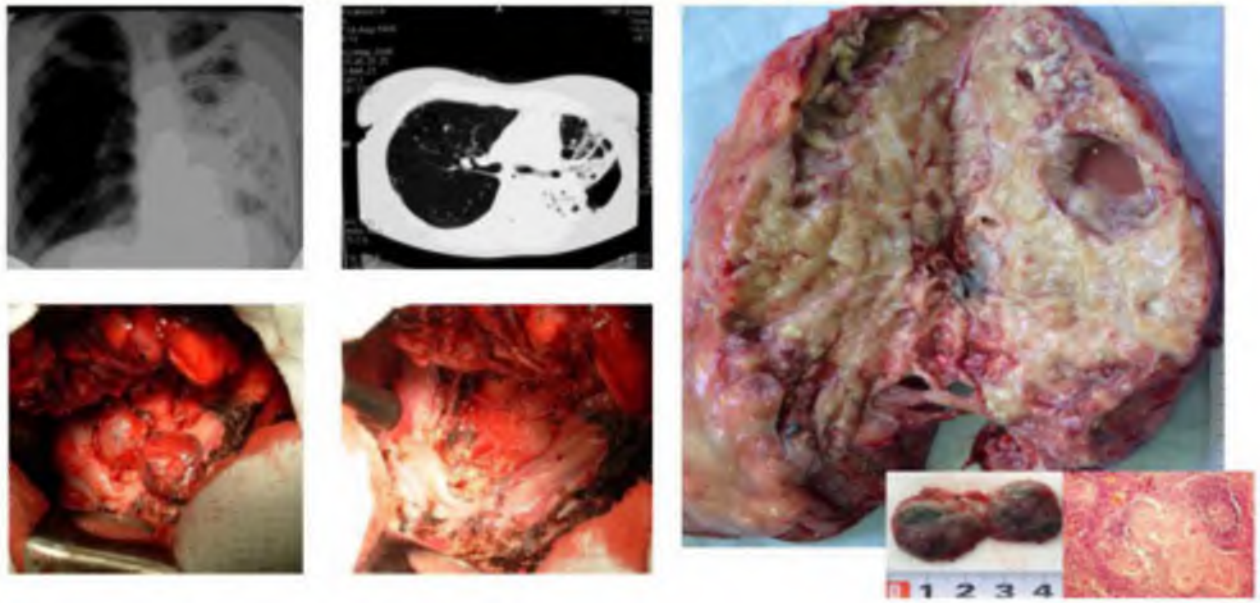
Separate Lung Vessels Ligation during VATS Pneumonectomy / VATS Resection



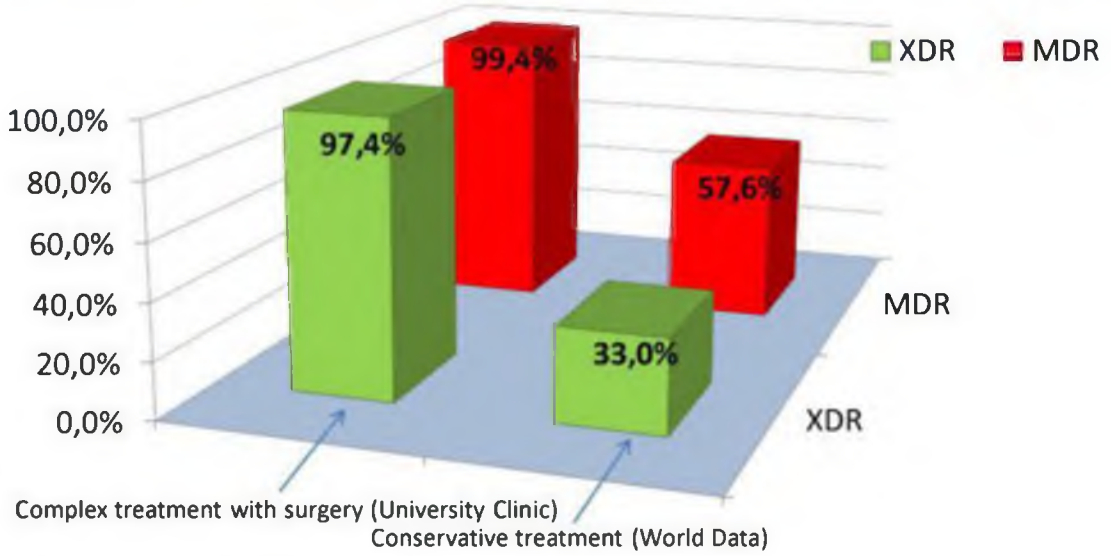
Main bronchus manual suturing (pneumonectomy)



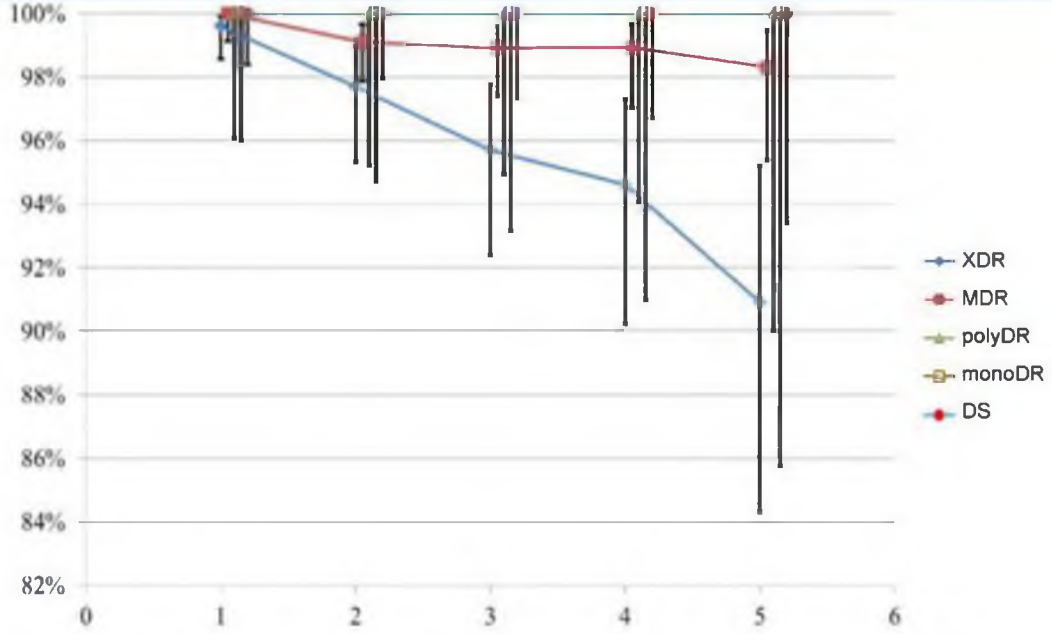
Mediastinal lymphadenectomy during pneumonectomy in caseous pneumonia



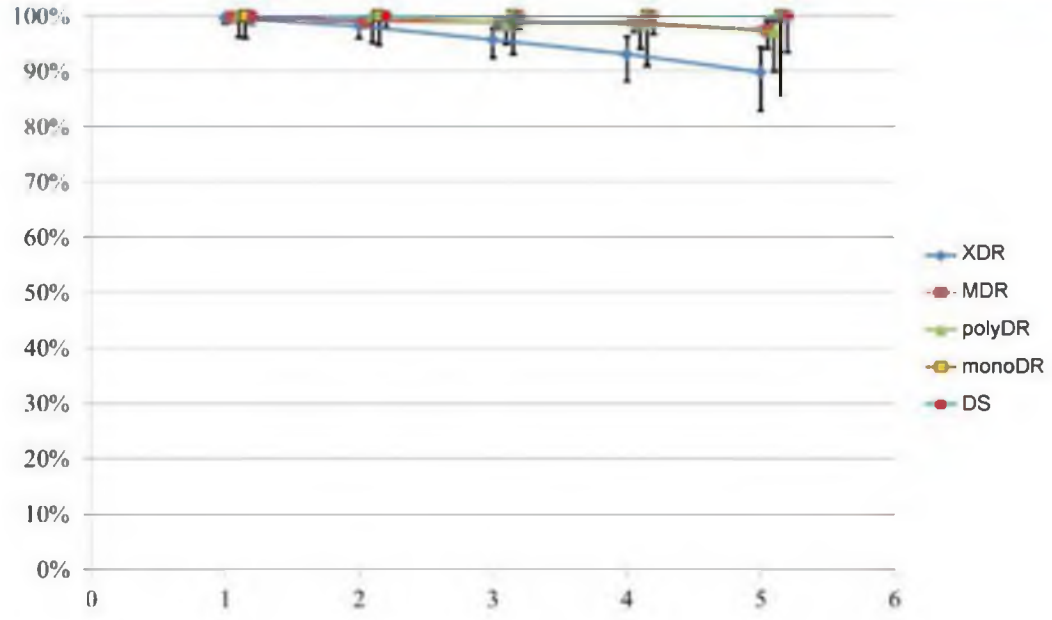
Direct Efficacy of MDR/XDR TB Treatment



Efficacy Dynamics after Surgeries Depending on MBT Resistance (long – term 5 years results)



Survival Rate after Surgeries Depending on MBT Drug Resistance



Conclusion

Thus, radical surgery inclusion in complex drug-resistant TB treatment makes it possible to increase MDR TB treatment efficacy at least twice, and XDR three times from the level of modern treatment efficacy in the world.

TB/HIV collaborative activities in LAO PDR

ASEAN VIDEO CONFERENCE 16 November 2020

Dr Sakhone SUTHEPMANY, Deputy Director of NTC

By: NTP Lao

1

Content

- Background
- HIV and TB burden in Lao PDR
- Prevention and case finding
- Treatment
- Next steps

2

Background

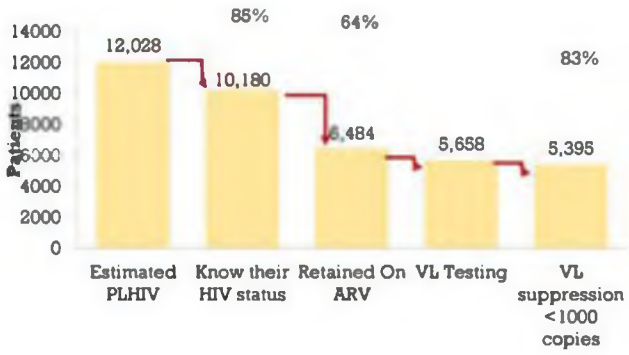
- Lao PDR has Communicable disease law (DCDC) HIV/AIDS law No TB-HIV co-infection law
- TB/HIV technical working group (TWG) includes MoH DCDC, National AIDS programme (Centre for HIV AIDS and STIs (CHAS)), NTP (National TB center (NTC)), CBOs, UNAIDS, WHO
- TB/HIV collaborative activities are included in both TB and HIV National plans and guidelines
- TB and HIV first joint GF grant ($15.5M) is approved for 2021-2023
- HIV and TB programs use same M&E platform (MoH HMIS DHIS2) for case based monitoring and reporting

3

HIV and TB burden in Lao PDR (1)

- National HIV prevalence was estimated at 0.3% of the adult population in 2019
- HIV is concentrated epidemic among KPs. Prevalence among MSM increased from 1.7% to 2.8% from 2014 to 2017 https://aidsinfo.unaids.org
- AEM-Spectrum modelling (UNAIDS): PLHIV increase to 14,570 by 2030 with 500-600 new infections and 200-300 deaths each year
- 11,000 FSW and 1,800 MSM were tested for HIV during the 4 last quarters (April 2019-March 2020)

HIV Patient Cascade in Lao PDR as of end of 2018

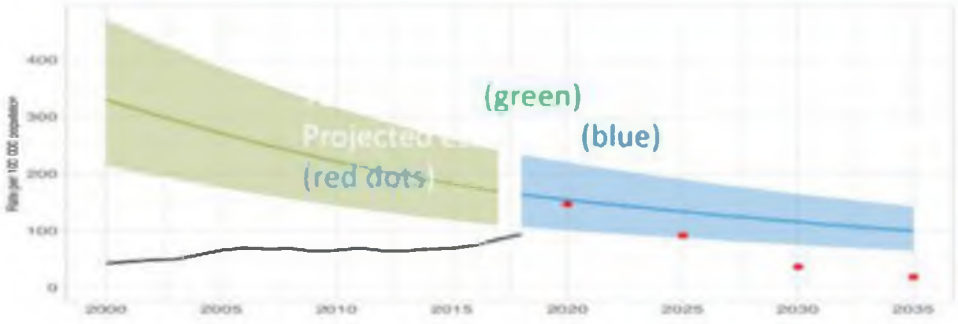


4

Indicators TB/HIV

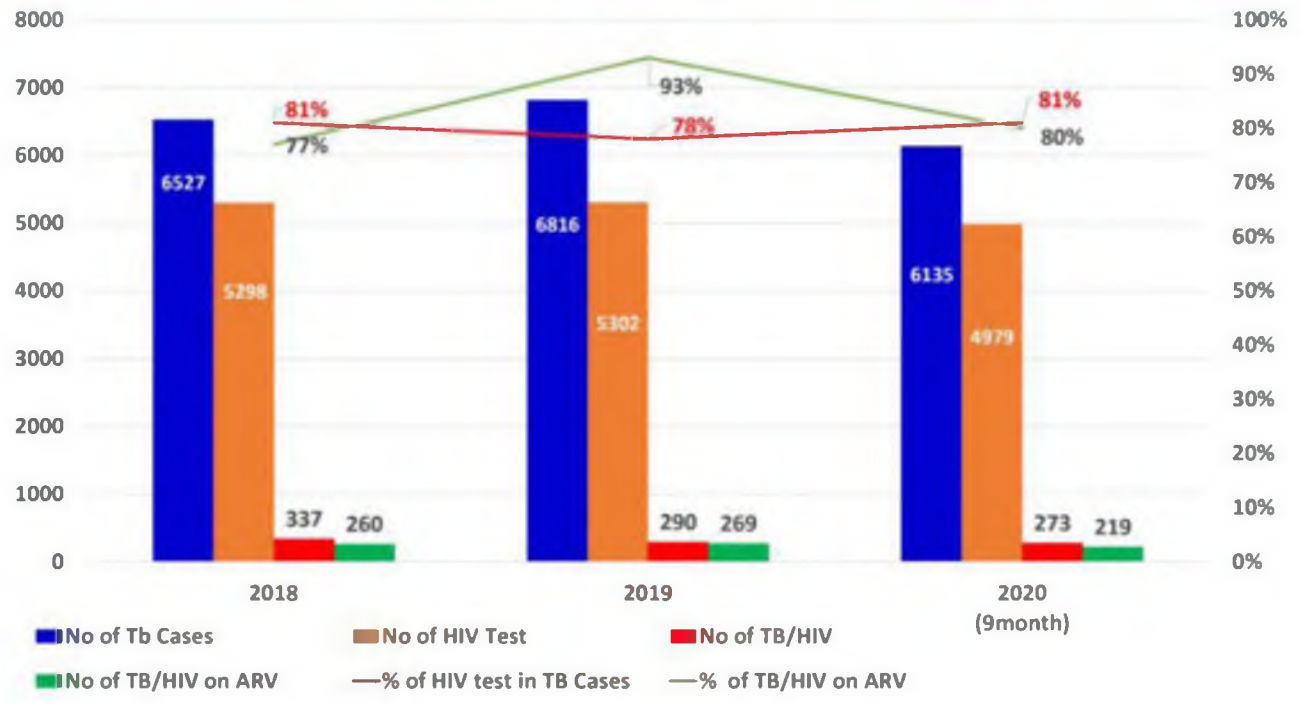
Indicators	2018		2019		2020	
	Target	Done	Target	Done	Target	Done (9month)
6. Percentage of notified cases of all forms of TB-(i.e. bacteriologically confirmed + clinically diagnosed), includes new and relapse cases Tested for HIV	100%	81%	100%	78%	100%	81%
7. Percentage of notified cases of all forms of TB-(i.e. bacteriologically confirmed + clinically diagnosed), includes new and relapse cases and HIV+	-	6,36%	-	5,46%	-	5,48%
8. Percentage of HIV-positive new and relapse TB patients on ART during TB treatment	90%	77%	90%	93%	90%	80%
9. Percentage of HIV-positive new and relapse TB patients on CPT (Cotrimoxazole) during TB treatment Cotrimoxazole	80%	67,6%	85%	80%	90%	84%

HIV and TB burden in LAO PDR (2)



- In 2019, estimated 155 (100-222)/100k TB incidence (11,000 cases) and treatment coverage 61%
- HIV positive TB incidence 8.5 (5.4-12)/100 (610 cases) and treatment coverage 48% (290)
- HIV neg. TB mortality 27 (16-41)/100k (1900 deaths) CFR 17%
- HIV+ TB mortality 2.9 (1.9-4.2)/100k (210 deaths) CFR 34%

Number of co-infection TB/HIV

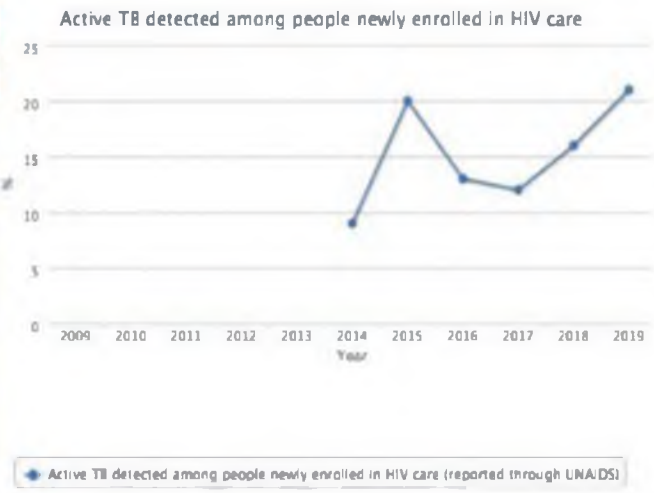


HIV/TB Prevention and case finding

- HIV and TB program implement HIV/TB collaborative activities for prevention and care of TB/HIV co-infection in country and cross border (training, joint supervision)
- Lao - Thai cross border collaboration for HIV and TB and Lao and Yunnan province for HIV (commodities, laboratory and treatment)
- 11 ART centres and 5 POC implement Intensified TB screening, Infection control (administrative, environmental and and PPE) and TPT to treat latent TB infection (LTBI)
- New PLHIV who do not have active TB disease at TB screening receive TPT (6 month Isoniazid)
- 80% among TB patients have and HIV test result available; HIV test 1 and 2 available for all TB patients at district level, third confirmatory test at provincial level/ART site

HIV te

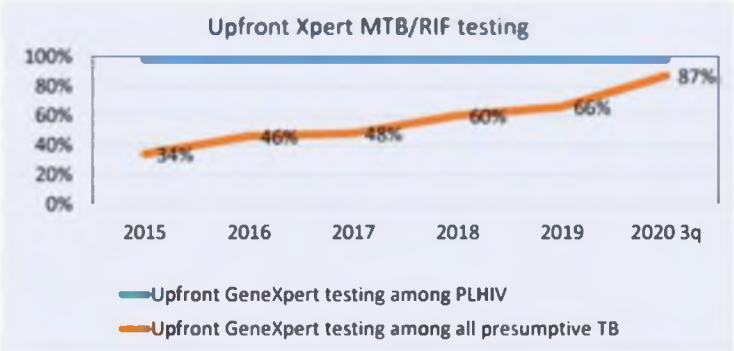
Year	TB cases (all forms)	HIV+ before TB	HIV+ after TB	Total HIV tested	%	No. of HIV+TB patients	% HIV+ among tested
2015	4638	261	49	4081	88%	310	7,6%
2016	4981	226	49	4572	92%	275	6,0%
2017	5730	246	56	5331	93%	302	5,7%
2018	6527	276	61	5312	81%	337	6,3%
2019	6934	231	59	5302	77%	290	5,5%
2020 (3q)	6212	215	58	4981	80%	273	5,5%

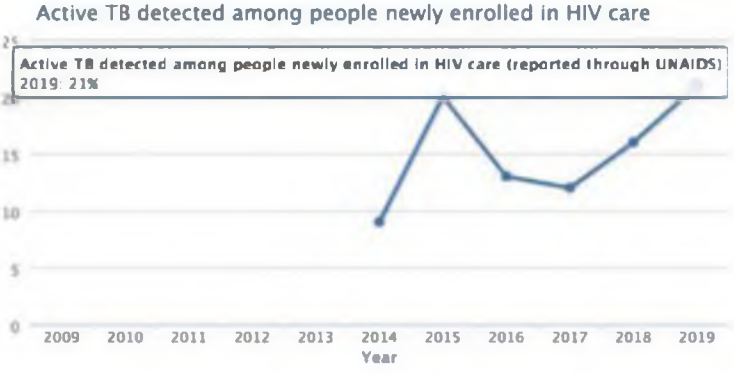


- HIV+ TB are mostly found among pre-existing PLHIV (by NAP, CHAS)
- HIV testing among all TB patients is ≈80% due to limited access to HIV test for TB patients in some districts

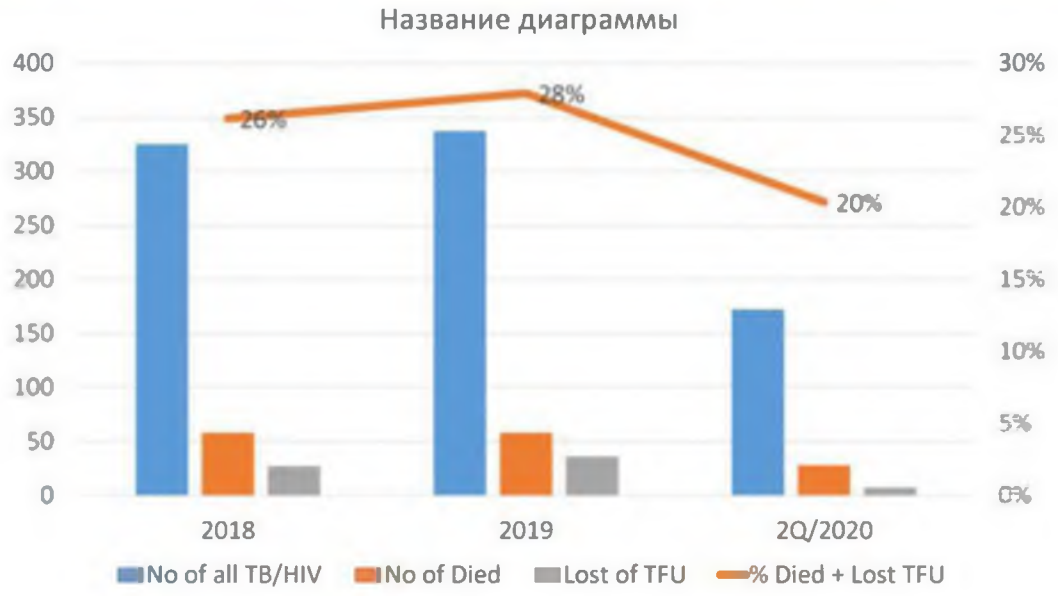
Diagnosis of TB among PLHIV

- TB incidence among PLHIV is high 15-20%
- Upfront Xpert testing among all PLHIV since 2015 and among all presumptive TB increasing rapidly (target 90% in 2020)
- Digital CXR can help for diagnosis of TB and other OI (e.g.: PCP, mediastinal adenopathy)





HIV+ TB Treatment outcome



11

ART TREATMENT

National policy is to provide ART to all PLHIV regardless of CD count after HIV diagnosis

11 ART sites (Central Provincial Hospitals) and 5 Point Of Care have the capacity for clinical management of TB and HIV cases

80% HIV+ TB patients receive ART mostly among pre-existing PLHIV (HIV+ before TB diagnosis); (80% 2017, 77% 2018, 83% 2019, 80% 2020 3q)

HIV+ TB patients tested HIV+ after TB diagnosis can have delayed access to testing and ART if they live in remote districts

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Challenges

1. TB/HIV indicators not yet reach the targets:
   - All forms of TB screened for HIV
   - HIV-positive new and relapse TB patients on ART during TB treatment
   - HIV-positive new and relapse TB patients on CPT during TB treatment
2. High death rate and lost of treatment follow-up
3. Delay of quarterly report and inconsistencies

13

Steps forward for TB/HIV 2021-2025

- Increased involvement of all healthcare providers, PCCA/DCCA, PLHIV networks and CBOs in the follow-up of patients
- Expand access to VCT unit in all districts
- Address high morbidity/mortality among HIV+ TB patients
- Capacity building for health staff at provincial, district and health centre levels to improve diagnosis of active TB and LTBI among PLHIV
- Utilization of GeneXpert for viral load (VL) in ARV sites.
- Decentralize access ART for all HIV+TB patients
- 100% patient monitoring and reporting with DHIS2 (HIV and TB tracker)

14

Kob jai

15

Russia: *M.D, PhD, Nadezhda Klevno "Tuberculosis and HIV infection in children: features of diagnosis, treatment, prevention"*

Federal State Budgetary Institution
'National Medical Research Center of Phthisiopulmonology and Infectious Diseases'
Ministry of Health of the Russian Federation

Tuberculosis and HIV-infection in children: diagnosis, treatment, prevention characteristics

M.D, Nadezhda Klevno, Leading researcher
Russian Federation

HIV-infected women and maternity in RF

Pregnancy has occurred
in every 15th HIV (+) woman

Gave birth to a child
every 20th HIV(+) woman

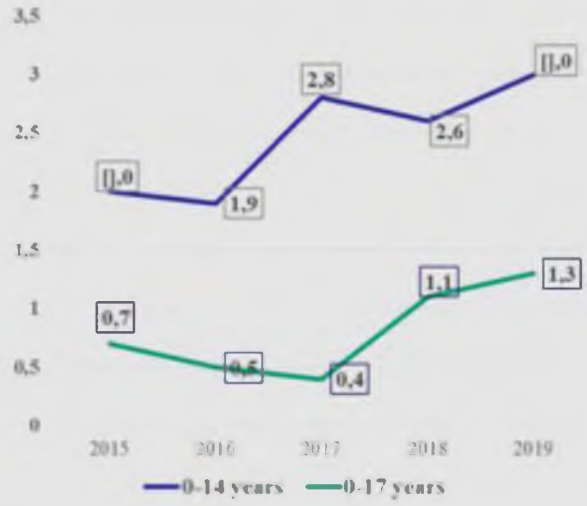
children were born alive (2019, f. №32)
1.450.487 13.675 from HIV mother- 0,9%

By the beginning of 2019 more than 10 000 HIV-infected children were registered

HIV+TB co-infection among newly diagnosed TB patients 0-17 years old

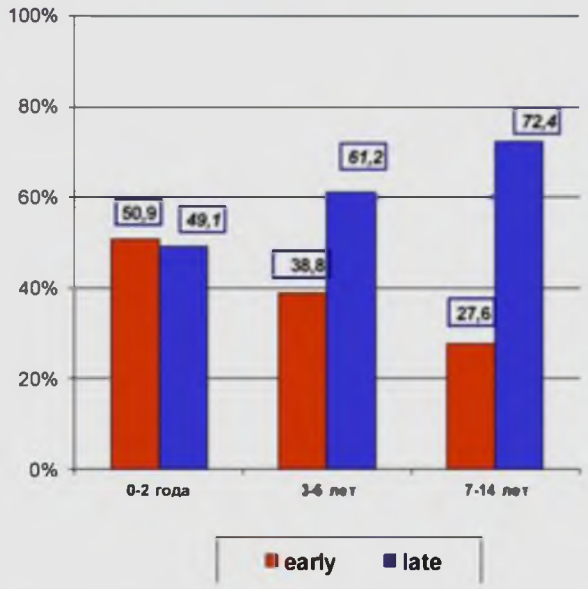
HIV infected (abs)

HIV infected (%)

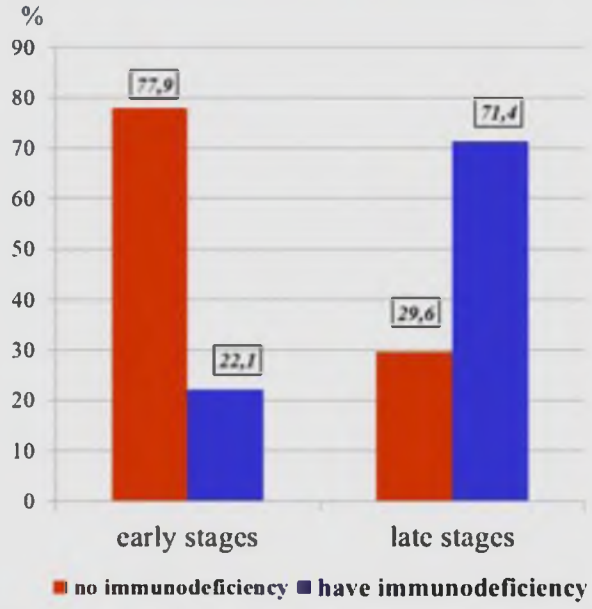


Stages of HIV infection and immune status in children with newly diagnosed TB (author's research n =166)

Stages of HIV infection



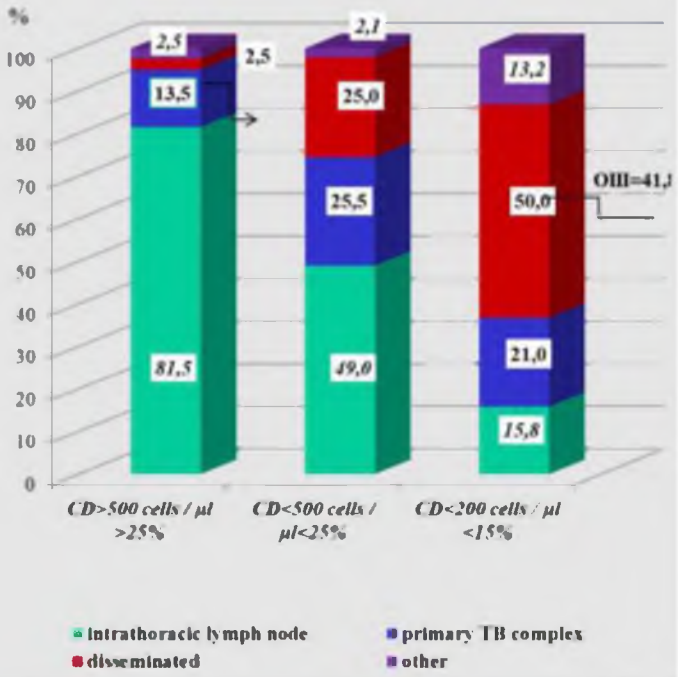
CD4 number in blood



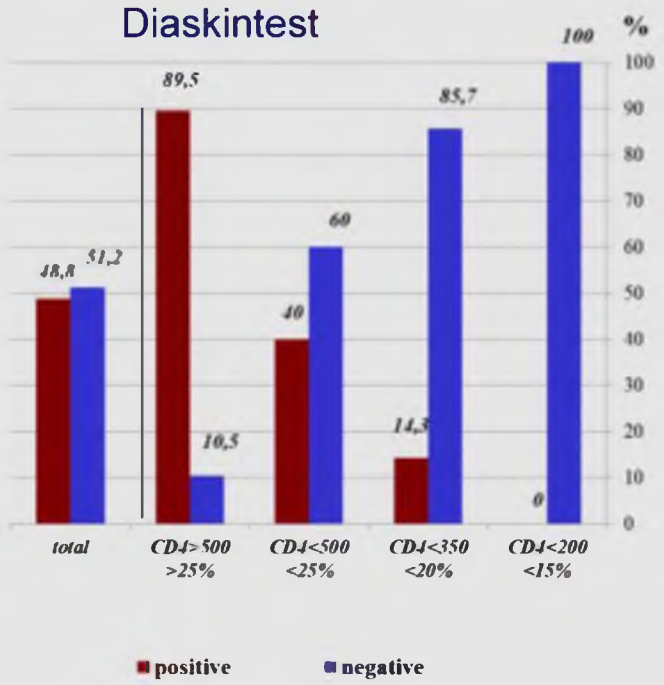
The structure of clinical forms of TB depending on the immune status (n =166)

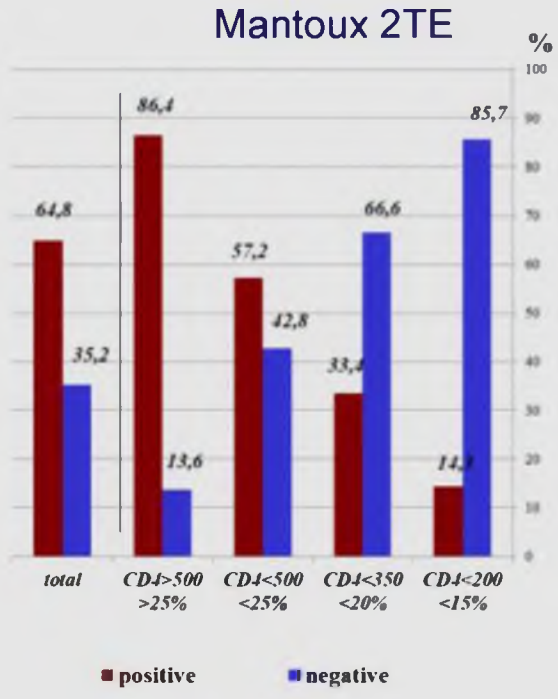
Generalized TB in a 12-year-old child (CD4 – 20 cells / µl)

TB forms from CD^{4+} number

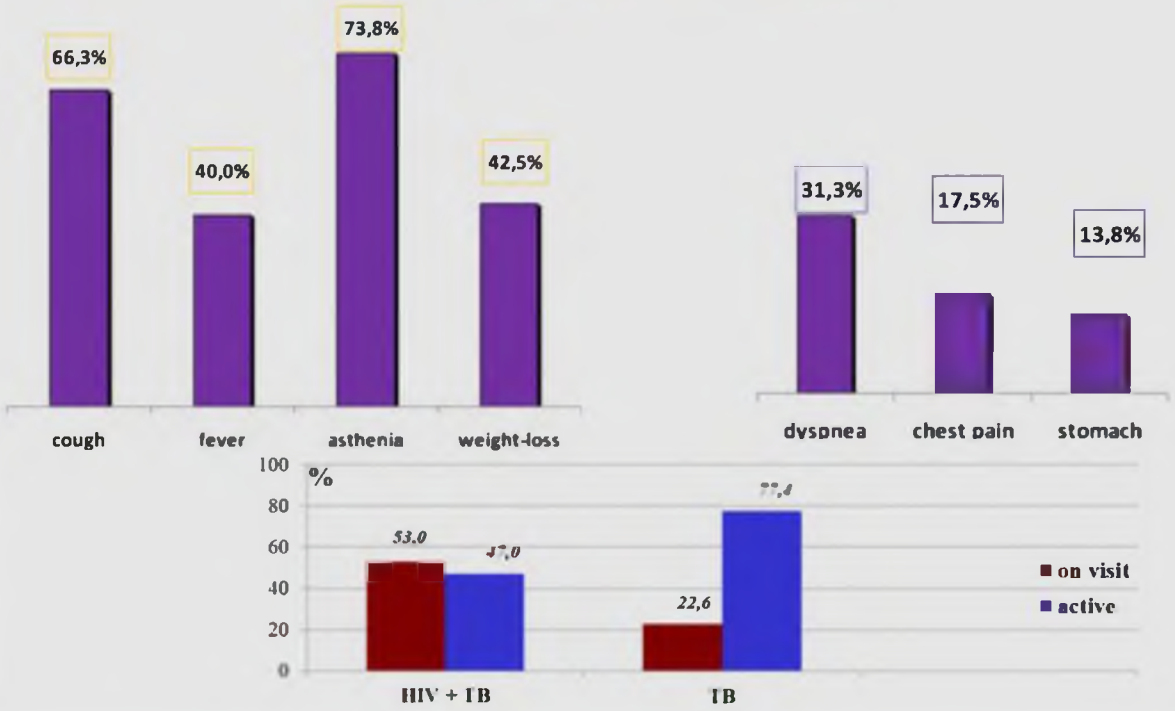


Detection and diagnosis of TB in children with HIV-infection (n =166)

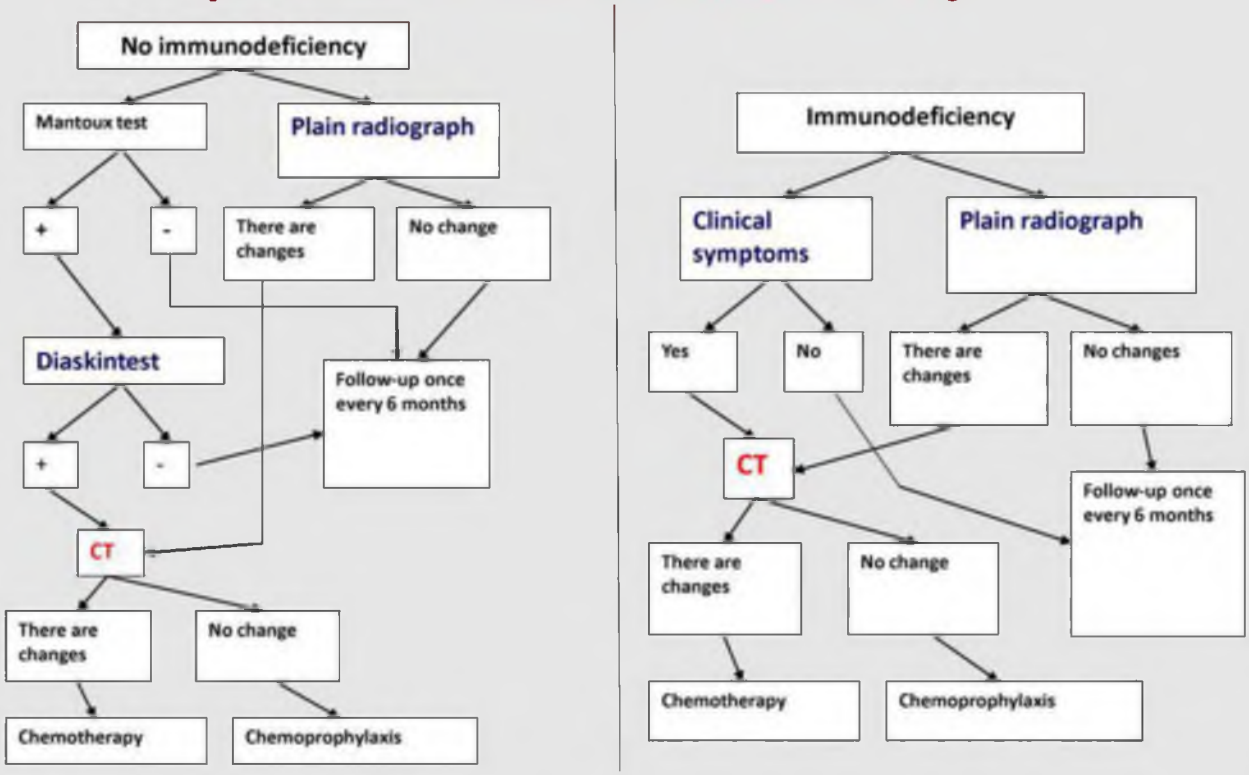




Clinical symptoms of TB in children with HIV-infection (n =166)



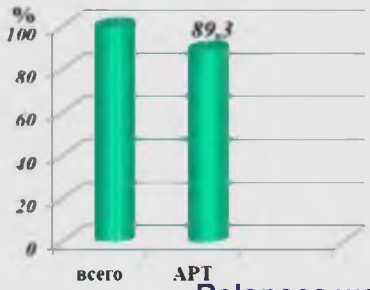
Tactics for TB diagnosing in the absence and presence of immunodeficiency



Treatment

Criteria for choosing anti-TB drugs:

- **high efficiency;**
- **safety;**
- **drug tolerance;**
- **ART compatibility**
- **presence of concomitant diseases**



Chemotherapy regimens

Chemotherapy regimens are individual among the third of patients :

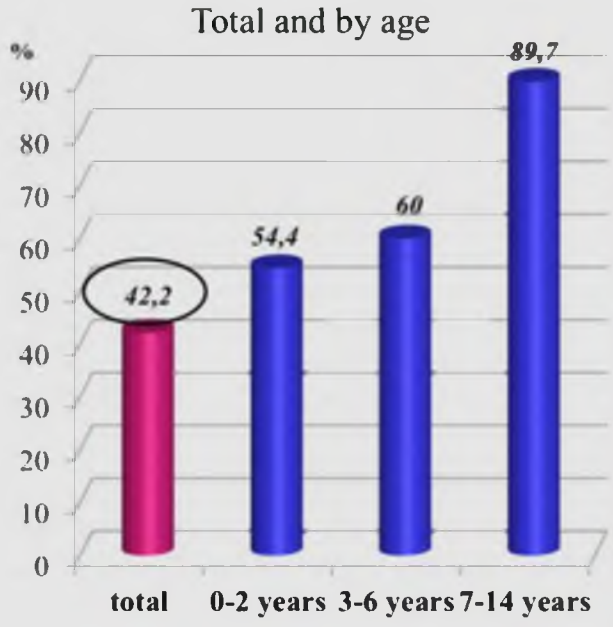
✓- more than 60% of children received ART before chemotherapy, the regimen was not changed, R was excluded;

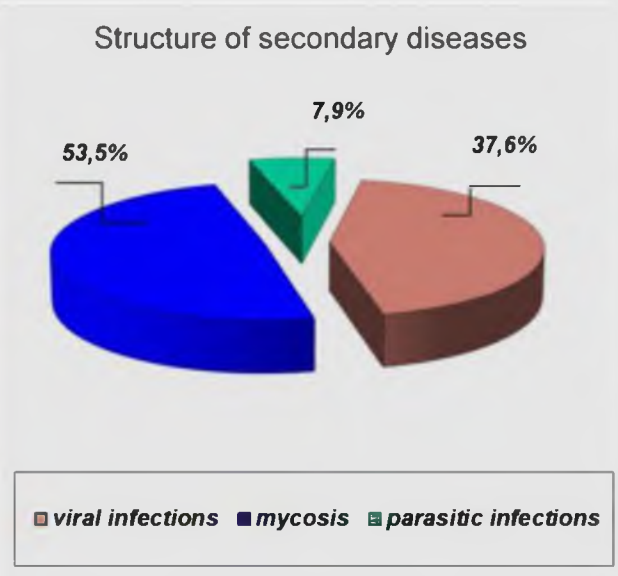
✓R excluded - reserve anti-TB drugs (fluoroquinolones) were prescribed;

✓the presence of concomitant conditions and diseases;

Relapses were noted in 7% of children after de-registration, treatment excluding R and only with anti-TB drugs

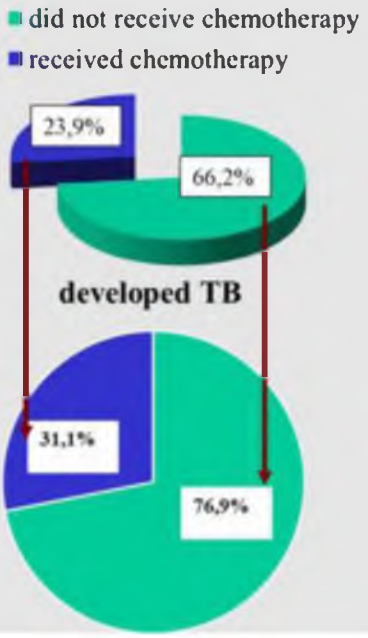
Secondary diseases in patients with TB combined with HIV infection





Prevention of TB in children with HIV infection

Specific: prophylactic anti-tuberculosis treatment (n =166)



Criteria for drug prescription:

- ✓First positive Mantoux test
- ✓Positive and doubtful Diaskintest (IGRA tests)
- ✓Contact with a TB patient
- ✓The presence of immunodeficiency (CD4 <350 cells) and secondary diseases, regardless of the test results

Management of patients with latent tuberculosis infection (LTBI)

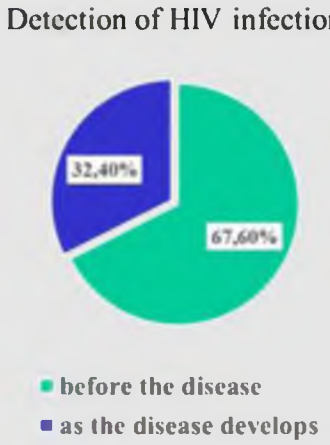
6.1. HIV-infection.

- ✓ Isoniazid (H) for 6 months,
- ✓ rifampicin(R) for 4 months,
- ✓ isoniazid and pyrazinamide/ ethambutol (HZ/E) for 3-6 months,
- ✓ Isoniazid in combination with rifapentine (HP) for 3 months, taking medications once a week,
- ✓ Prescribing R, HP taking into account ART

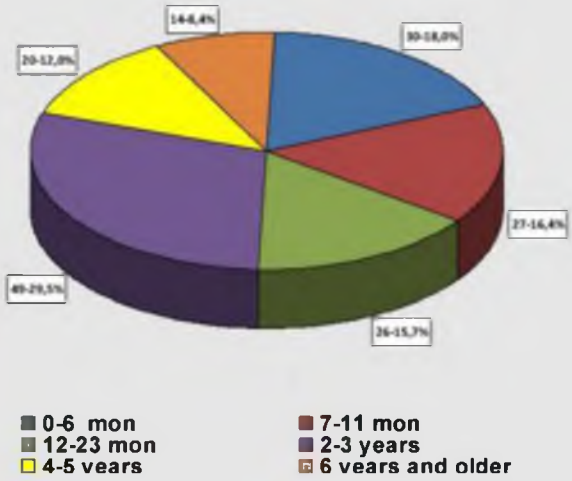
Prevention of TB in children with HIV infection

Non-specific: early detection of HIV infection

In one third of children (32,4%) with TB, HIV infection was detected simultaneously with tuberculosis



in 30% of children HIV infection was diagnosed after 2 years old



Conclusion

To prevent TB development:

✓Timely diagnosis and monitoring of latent tuberculosis infection;

✓100% coverage of HIV infected children with preventive anti-tuberculosis treatment in indicated cases;

✓Early diagnosis of tuberculosis (by all methods and taking into account the immune status);

✓If respiratory tuberculosis is suspected – CT of the lungs;

✓Dispensary observation of children who have undergone tuberculosis under 18;

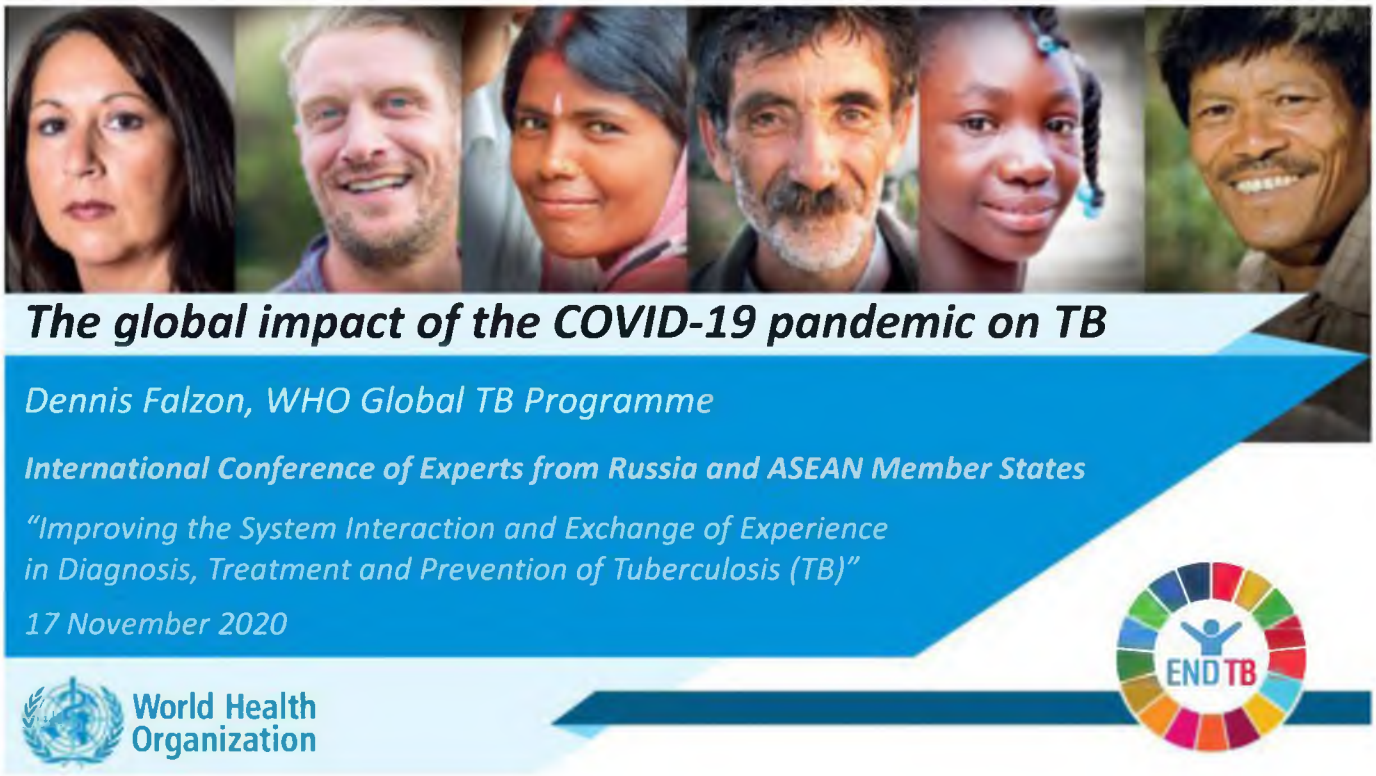
Conclusion

To prevent TB development:

For HIV infection

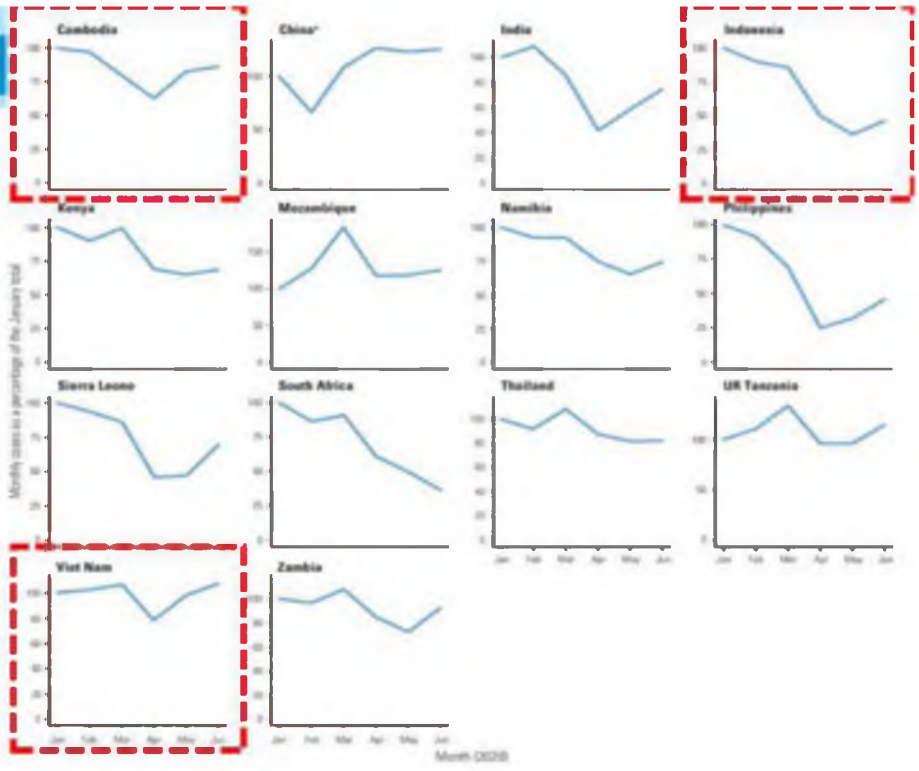
✓Early treatment – HAART can be a method of preventing common forms of tuberculosis. According to our data, against the background of 'planned' ART, the tuberculous process was more limited than in children who did not receive ART (OR=3,85; 95% CI 2,4-7,3), disseminated (generalized) processes were diagnosed only in children, who did not receive ART before the disease was diagnosed;

Thank you for attention!


The global impact of the COVID-19 pandemic on TB
Dennis Falzon, WHO Global TB Programme
International Conference of Experts from Russia and ASEAN Member States
"Improving the System Interaction and Exchange of Experience
in Diagnosis, Treatment and Prevention of Tuberculosis (TB)"
17 November 2020
World Health Organization
END TB

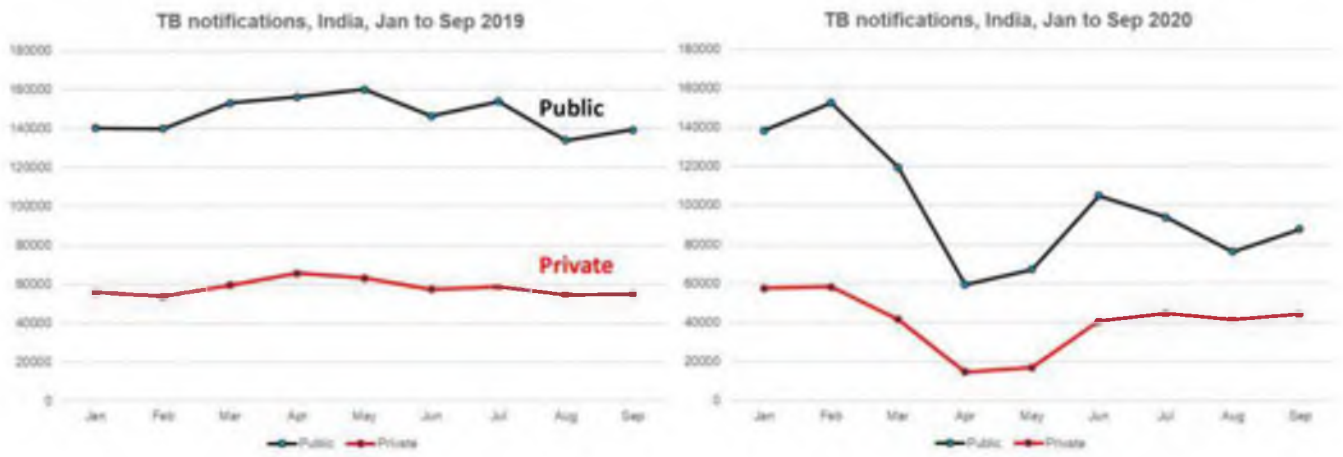
Impact

Drops in TB case notifications concurrent with the introduction of COVID-19 measures, and sustained for more than one month, have been reported from several high TB burden countries



World Health Organization

India: TB notifications in **public** and private sectors, 2020 vs 2019

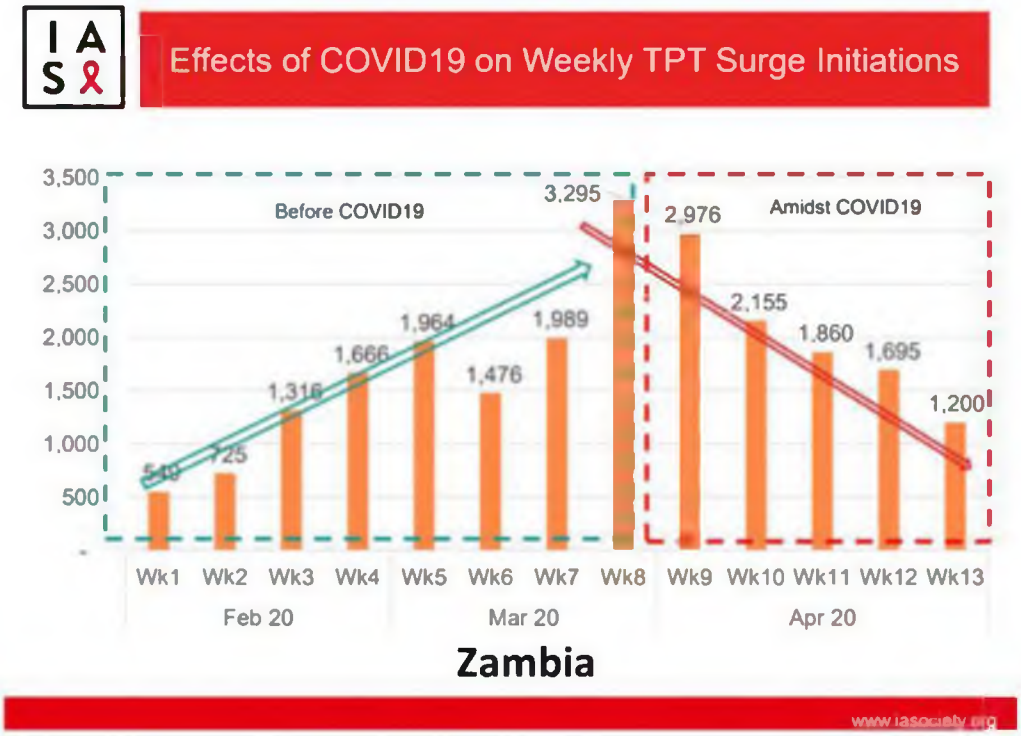


Source: Nikshay, India (as on 4 November 2020)
https://reports.nikshay.in/

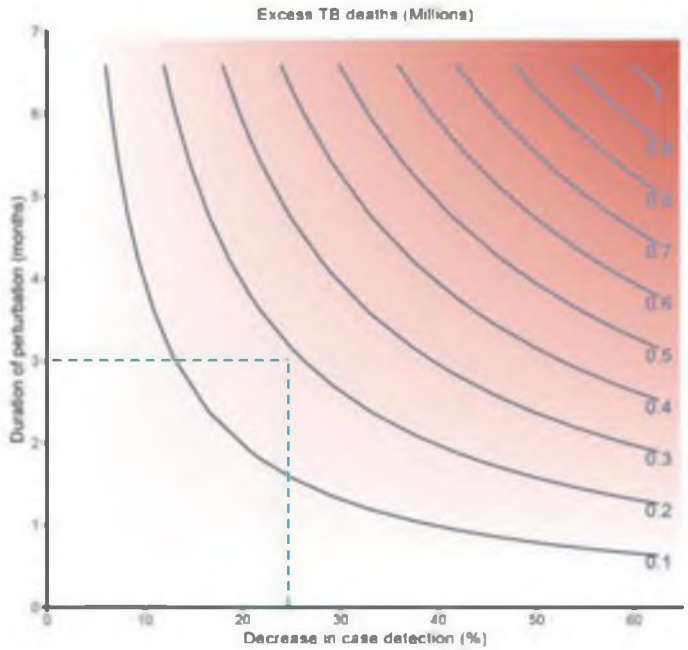
China : TB notifications, 2017-2020

in the weeks before and after the Chinese Spring Festival

Source: H Fei, China (as on 9 May 2020)



Predicted excess in global TB deaths in 2020



If 25% drop in global case detection over 3 months

→ 190,000 additional TB deaths

(on top of 1.4m TB deaths predicted for 2020)

COVID-19 related impact on key drivers of TB

World Health Organization

The cost of inaction: COVID-19-related service disruptions could cause hundreds of thousands of extra deaths from HIV

World Health Organization Africa

COVID-19 could deepen food insecurity, malnutrition in Africa

14 May 2020

Brazzaville – The World Health Organization (WHO) today expressed concern at the potential impact of COVID-19 on food security which is likely to exacerbate the already considerable burden of malnutrition in Africa. The impact of the disease is expected to be greater among those grappling with food scarcity and malnutrition, while widespread food insecurity will likely increase due to movement restrictions

Click image to enlarge

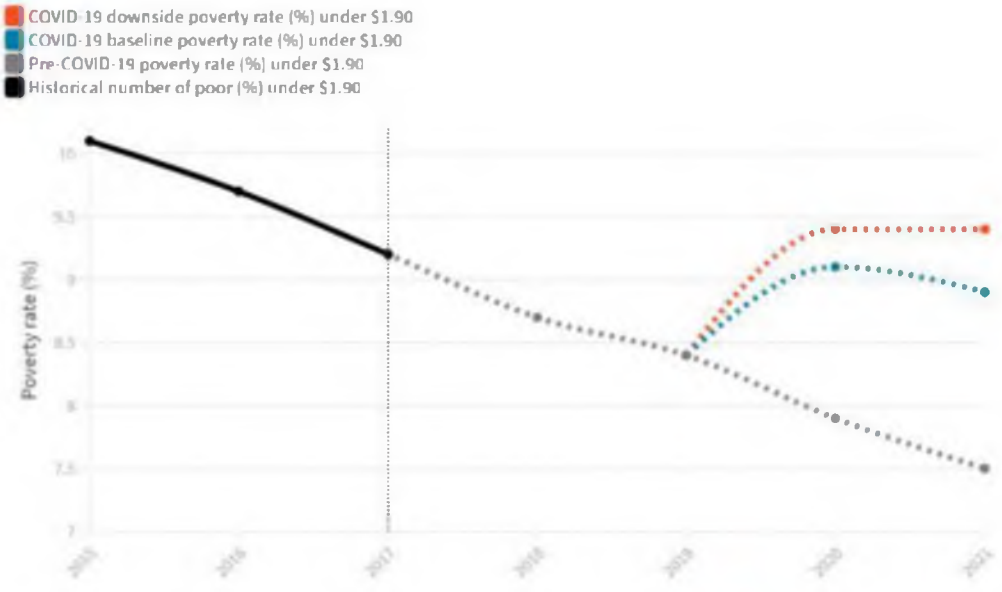
World Health Organization

COVID-19 significantly impacts health services for noncommunicable diseases

-5.2% global contraction in GDP in 2020

	2019	2020
World	2.4	-5.2
Advanced economies	1.6	-7.0
Emerging market and developing economies	3.5	-2.5

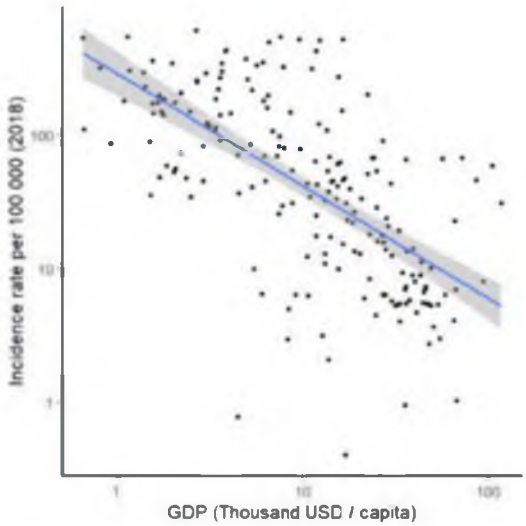
World Bank. Global Economic Prospects, June 2020

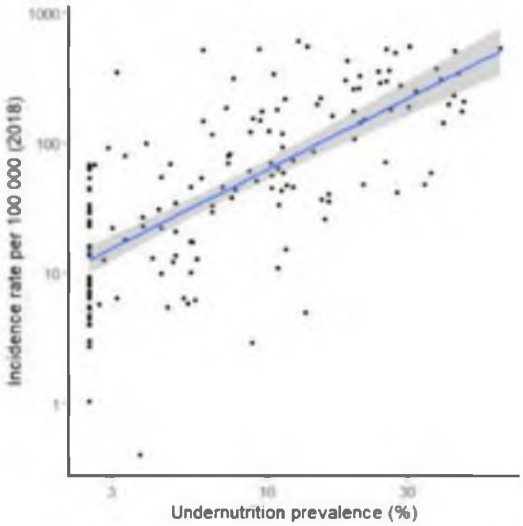


Source: Poverty and Shared Prosperity 2020. PovcalNet • Note: Extreme poverty is measured as the number of people living on less than $1.90 per day. 2017 is the last year with official global poverty estimates. Regional nowcasts can be found here: https://public.flourish.studio/visualisation/3704609/.

WORLD BANK GROUP

Tuberculosis, a disease of poverty





World Health Organization

Response

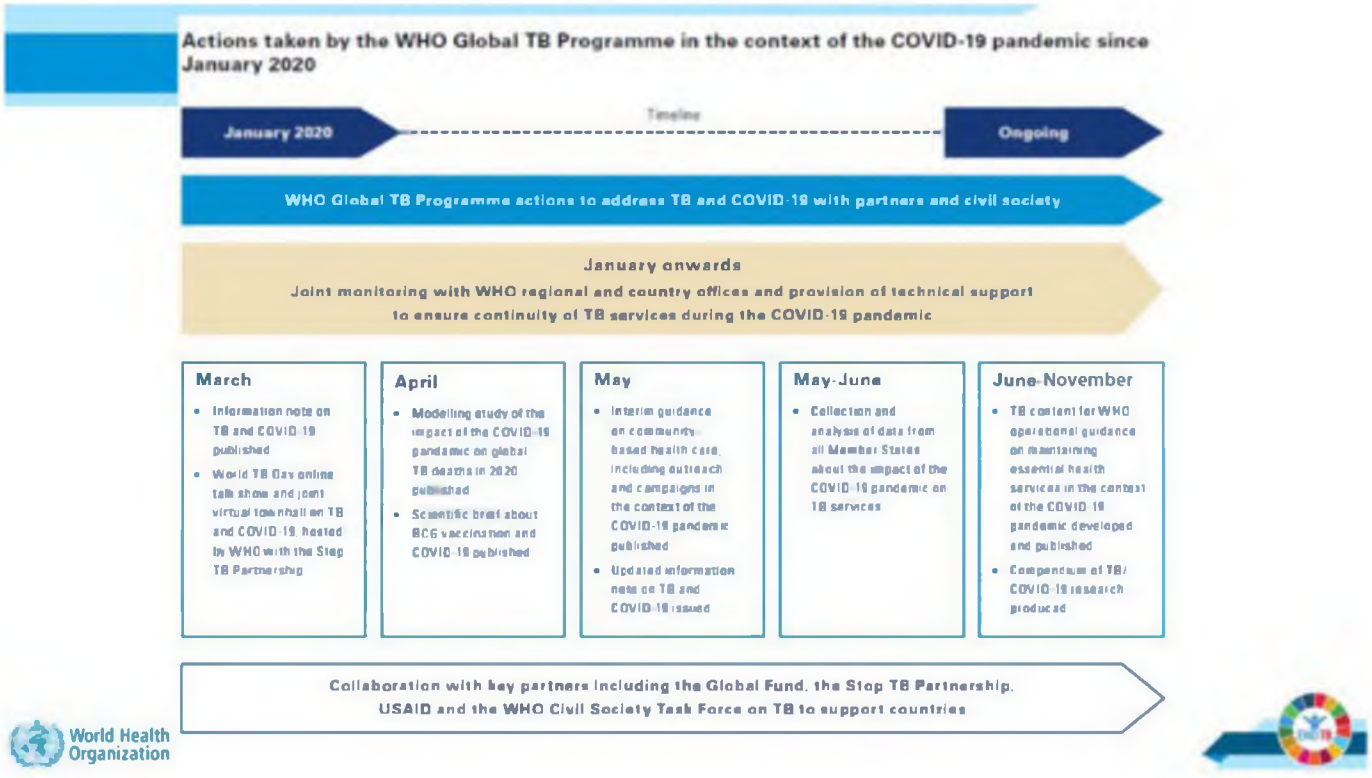
Key actions of TB programmes during COVID-19

- leverage the expertise of TB programmes for the COVID-19 response
- maximize remote care for people with TB through digital technologies
- minimize the number of visits to health services that are required during treatment, including through use of WHO-recommended, all-oral TB treatment regimens and community-based care
- limit transmission of TB and COVID-19 in congregate settings and health care facilities by ensuring basic infection prevention and control for health staff and patients
- maintain and scale up TB preventive treatment, including via synergies with contact tracing efforts related to COVID-19
- provide simultaneous testing for TB and COVID-19 for individuals when indicated
- ensure proactive planning and budgeting for both conditions

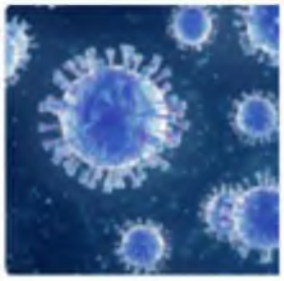
World Health Organization

Impacts on TB services and mitigation strategies reported by 184 NTPs to WHO in April–May 2020

IMPACT OR MITIGATION STRATEGY	NUMBER OF COUNTRIES THAT REPORTED THE IMPACT OR MITIGATION STRATEGY	
	ALL COUNTRIES (N=184)	30 HIGH TB BURDEN COUNTRIES
Impacts on health service availability		
Fewer health facilities providing outpatient care for people with drug-susceptible TB	32	7
Fewer health facilities providing outpatient care for people with multidrug- or rifampicin-resistant (MDR/RR) TB	21	4
Fewer hospitals providing inpatient care for people with drug-susceptible TB	35	9
Fewer hospitals providing inpatient care for people with MDR/RR-TB	33	9
Reduced number of outpatient visits for people with TB	127	28
People with TB asked to self-isolate at home	93	14
Reallocation of TB resources to the COVID-19 response		
Reallocation of NTP staff at national or subnational level	85	20
Reallocation of funding	52	14
Reallocation of GeneXpert machines	43	13
Mitigation strategies to facilitate continued access to treatment		
Providing TB patients with at least a 1-month supply of anti-TB drugs	100	25
Home delivery of anti-TB drugs	77	14
Enabling TB patients to nominate a household member to collect their drugs	96	20
Expanded remote advice and support using digital technologies	108	21



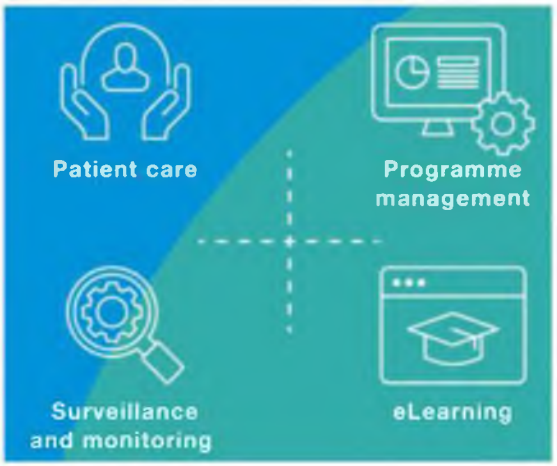
"Retooling" for current challenges



Examples of products used for TB programmes now being roped into the COVID-19 response

Digital adherence technologies

Connected diagnostics



Contact investigation apps

Online training in laboratory biosafety

World Health Organization

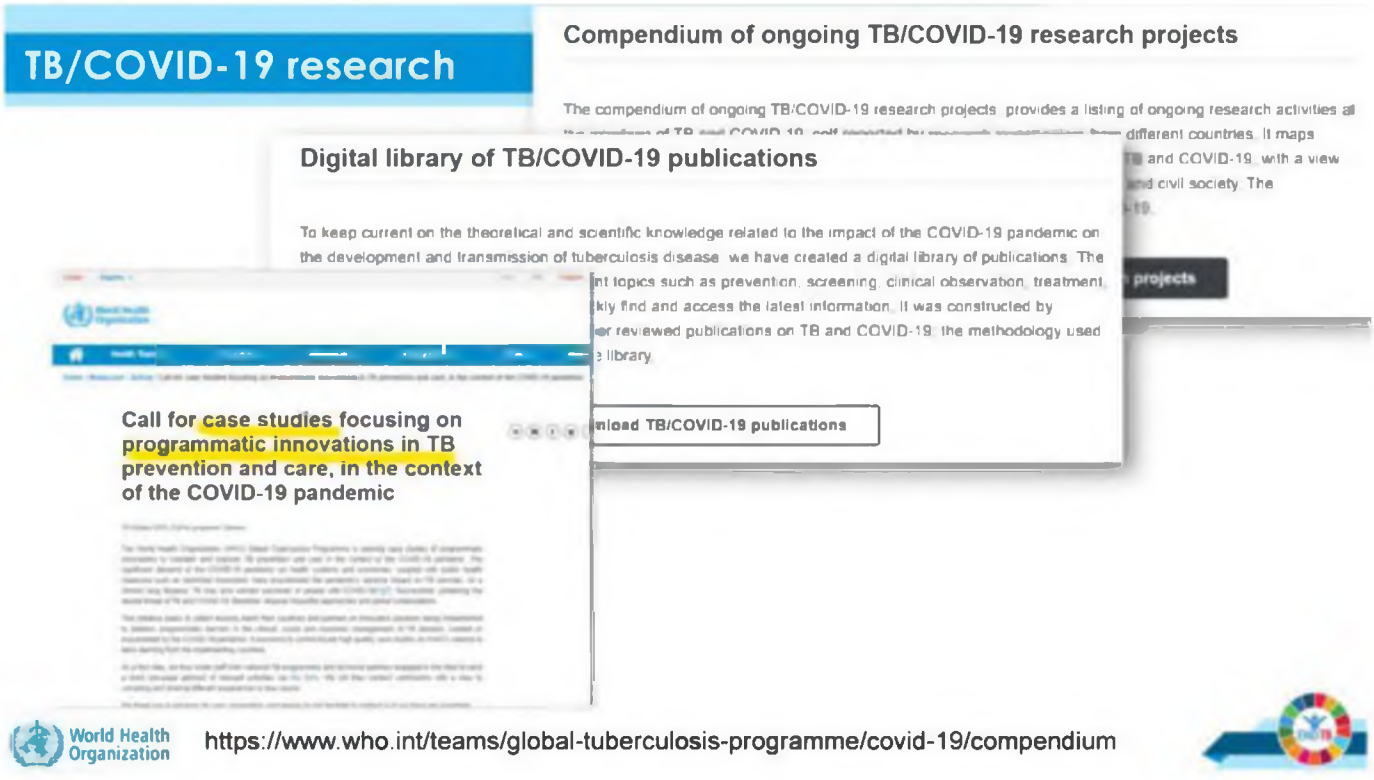
Operational planning during COVID pandemic

Maintaining TB care as an essential health service

Programme activities	*Modifications for safe delivery of services*	*Transition towards restoration of activities*
Prevention	Contact investigation Drug stocks for TPT	Monitor contact investigations and recruitment on TPT
Diagnosis	Molecular diagnostic services Transporting biological specimens Biosafety during diagnostic testing	Monitor test requests or diagnosed TB Restart specimen collection at facilities Maintain universal biosafety precautions
Treatment & care	Drug stocks for TB treatment Communication technologies for treatment support and reduce visits	Monitor TB treatment recruitment Document uptake of digital adherence technologies

World Health Organization


World Health Organization
Global research on coronavirus disease (COVID-19)


TB/COVID-19 research
Compendium of ongoing TB/COVID-19 research projects
Digital library of TB/COVID-19 publications
Call for case studies focusing on programmatic innovations in TB prevention and care, in the context of the COVID-19 pandemic
World Health Organization
https://www.who.int/teams/global-tuberculosis-programme/covid-19/compendium

Conclusions

- The COVID-19 pandemic is likely to have a lasting impact on TB burden and transmission
- Addressing COVID-19 adequately will challenge competing needs to maintain and continue to develop essential services like TB
- Recovery post-pandemic will be influenced by the global socio-economic downturn forecasted in the coming months, with a risk for further marginalization of vulnerable populations
- WHO Global TB Programme, WHO regional and country colleagues and partners continue to monitor the situation and supporting countries in the response

World Health Organization

Acknowledgements

- WHO Global TB Programme staff
- WHO Regional TB Advisers
- WHO Country Staff
- Other WHO/HQ departments (e.g. emergencies, infection control)
- National TB Programmes & other MoH staff
- Technical and funding partners
- Affected people and communities

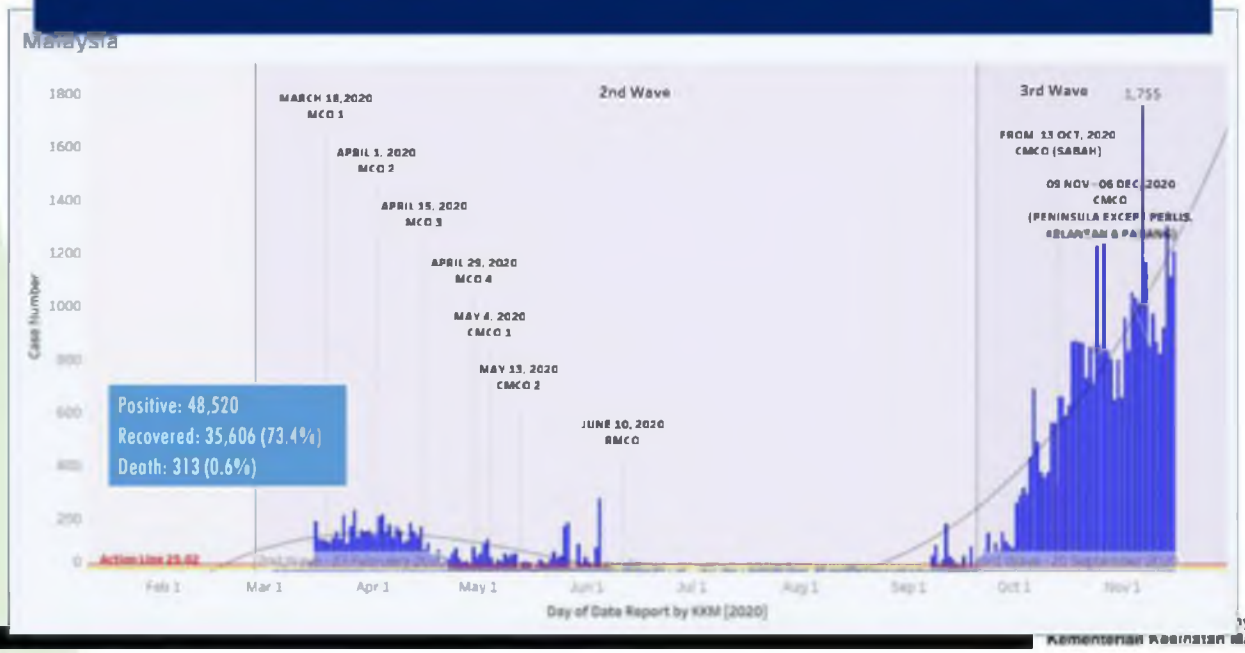
World Health Organization

Impact of Tuberculosis Control Program during Pandemic Covid-19 in Malaysia

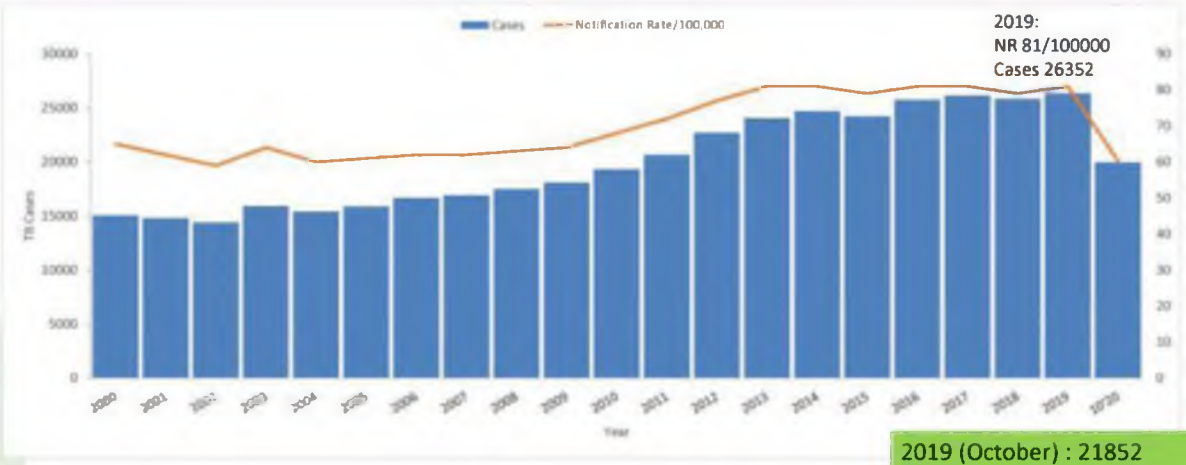
UNITE TO END TB

Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

COVID 19 DISTRIBUTIONS TILL 16th NOV 2020



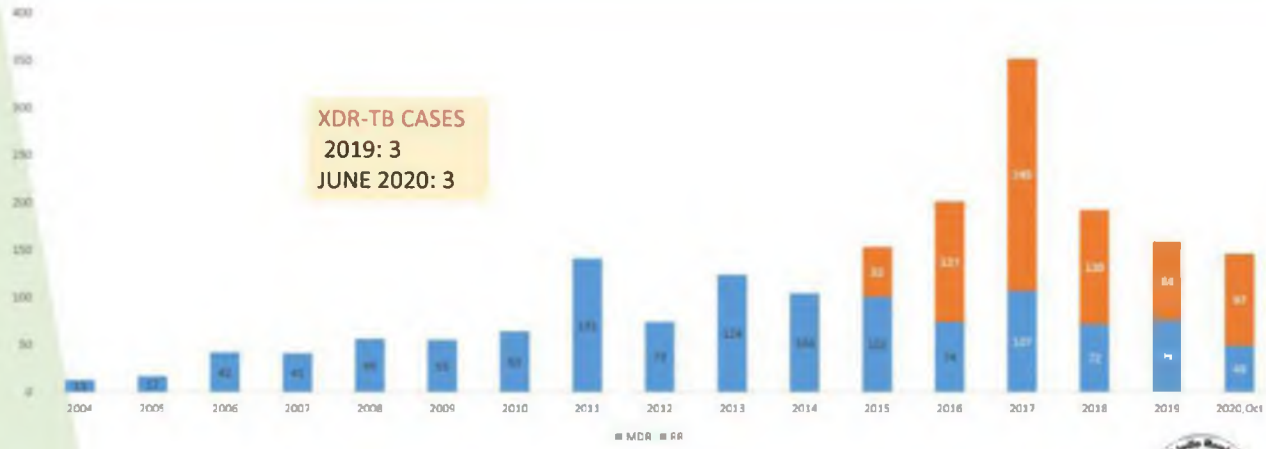
TB CASES (ALL FORM) & NOTIFICATION RATE, MALAYSIA, 2000- 2020 (Octeber EW 44)



2019 (October) : 21852
2020 (October) : 19954(-9.5%)

Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

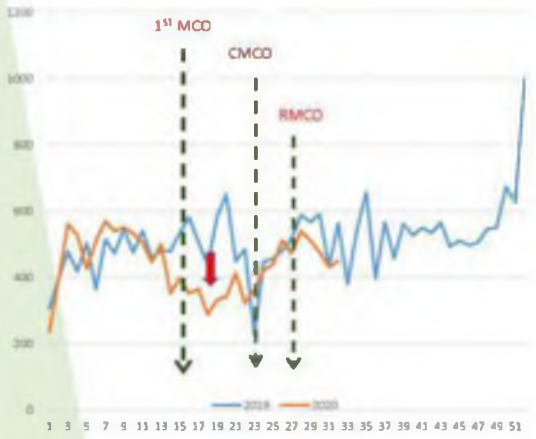
MDR-TB CASES, MALAYSIA (2004-2014), MDR/RR (2015-2020 October)



Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

Challenges for TB Program during COVID-19 Pandemic

TB CASES By EPID WEEK (EW 1-32)



CDR, ACD, Contact (2019 vs 2020)

COVID-19 with Hx PTB
-PTB +ve = 20
-PTB –ve = 8
-Extra PTB = 7

Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

Best Practices

Early adaptation of new norms in National TB Control Program:
- Community/Modified DOT- virtual
- Practicing new norm activities on ACD, investigations, Diagnosis, Treatment, Health promotion and Training

Strengthening of TB activities in Institutions:
- Guideline on TB Management in Drug Rehabilitation Centre
- Guideline on Management of TB in Immigration Detention Centre

Expansion of screening for Latent TB and Management:
- All contacts of smear positive TB cases
- Contacts among TB cluster/outbreak
- Healthcare workers

Kementerian Kesihatan Malaysia

Challenges faced in MALAYSIA in managing TB/DRTB

- **Further away from hitting the goal of the END TB strategy due to:**
  - ✓ Not/late seeking treatment by patient- lead to increase in mortality
  - ✓ Missing of TB cases - the symptoms of TB and COVID-19 can be similar
  - ✓ Low treatment adherence lead to high loss to follow up cases.
  - ✓ Non adherence to contact screening and follow up as required by SOP
- Monitoring of progression from **latent tuberculosis infection to active disease** since COVID-19 could accelerate activation of dormant tuberculosis.

Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

THANK YOU

UNITE TO END TB

Bahagian Kawalan Penyakit
Kementerian Kesihatan Malaysia

The Best Practices in TB Control in Myanmar as a base for further collaboration for End TB

Dr. Aye Nyein Phyu
Medical Officer
National Tuberculosis Programme(Central- Mandalay)

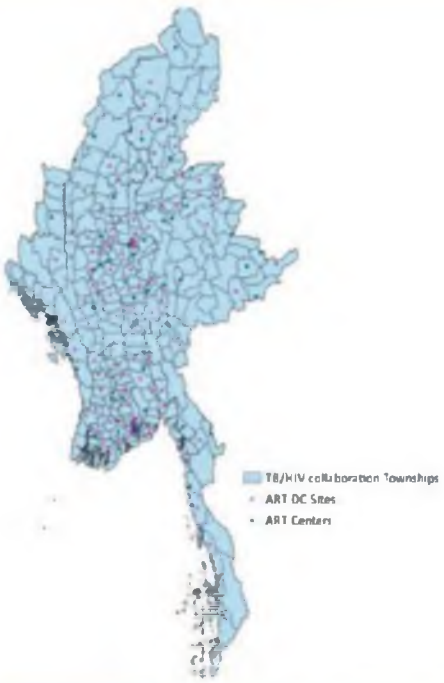
Presentation Outlines

- Best practices in TB/HIV services
- Accelerated case findings activities
- PPM(public private mix/public public mix) activities
- Community based MDR-TB care
- TB Preventive Therapy
- Challenges
- Future plan

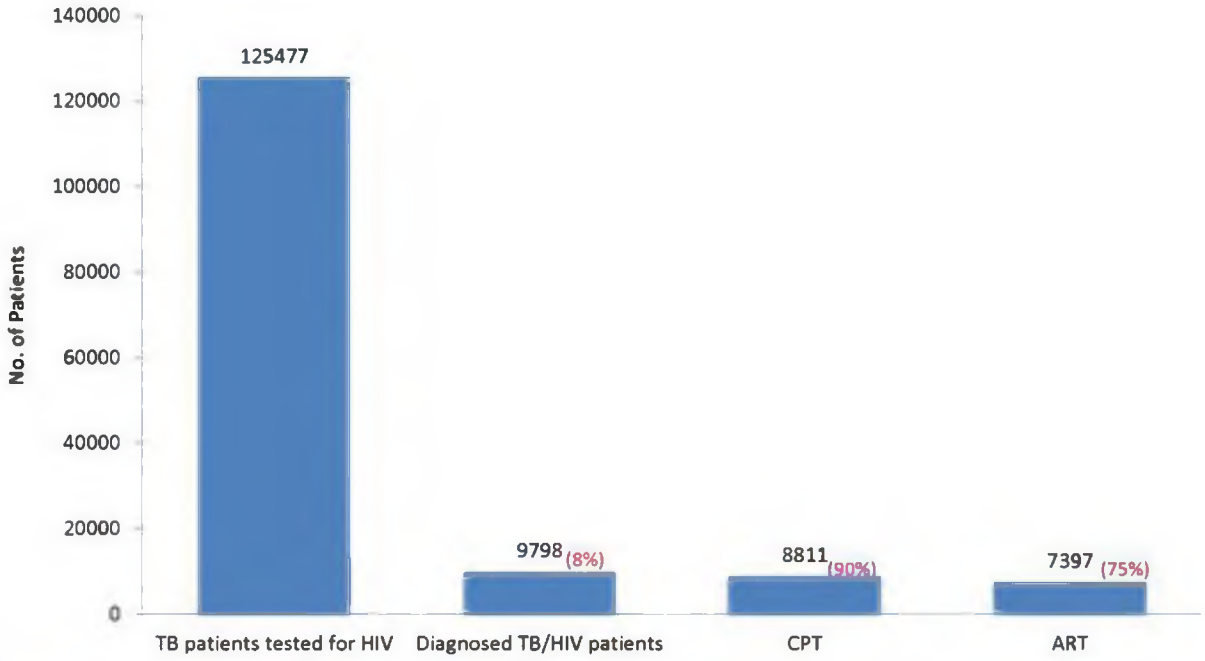
TB/HIV services in Myanmar

TB/HIV collaborative townships and ART centers/DC sites

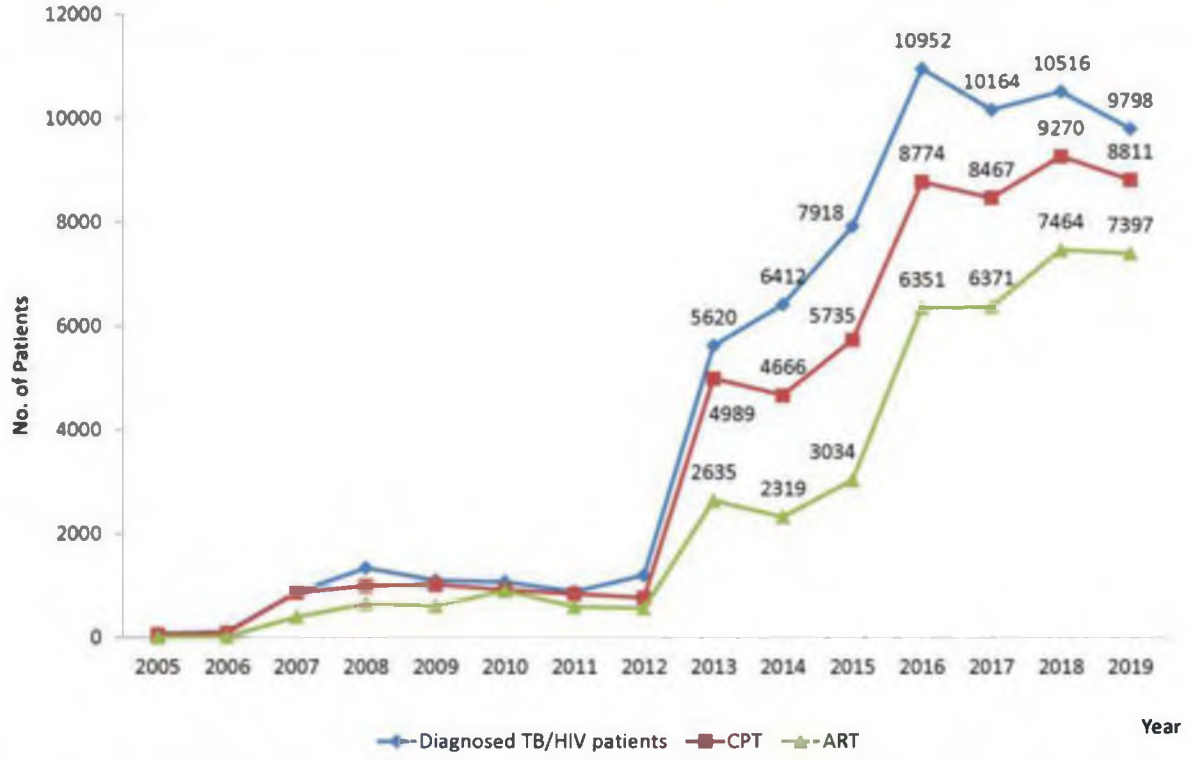
- Initiated in **7 townships** since **2005**
- Gradually expanded to **28 townships** by **2013**
- Scaled up to 108 townships in 2014; covering **a total of 136 townships** in 2014
- Scaled up to 100 townships in 2015; covering a total of **236 townships**
- Scaled up to **94 townships** in 2016; covering all **330 townships** in 2016.



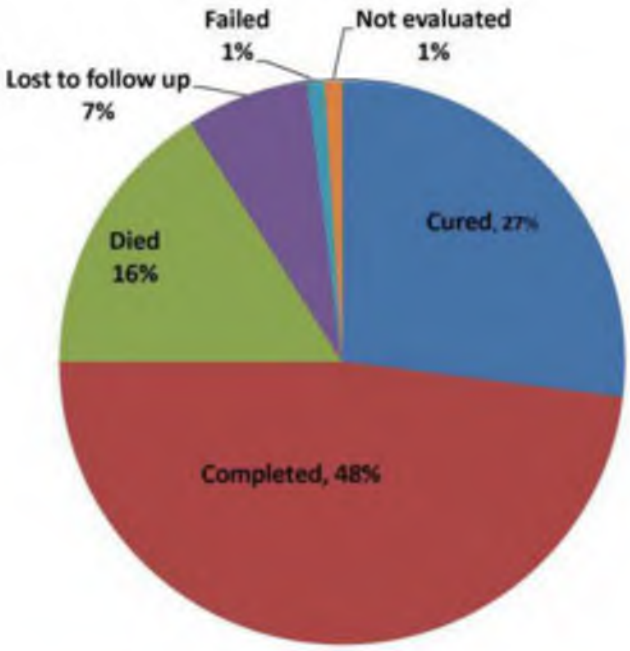
TB/HIV Collaborative Activities (2019)



Trend of TB/HIV Collaborative Activities



Treatment Success Rate (TSR) of TB/HIV cases, 2018 cohort



TSR 75%

Accelerated Case Findings Activities 2019

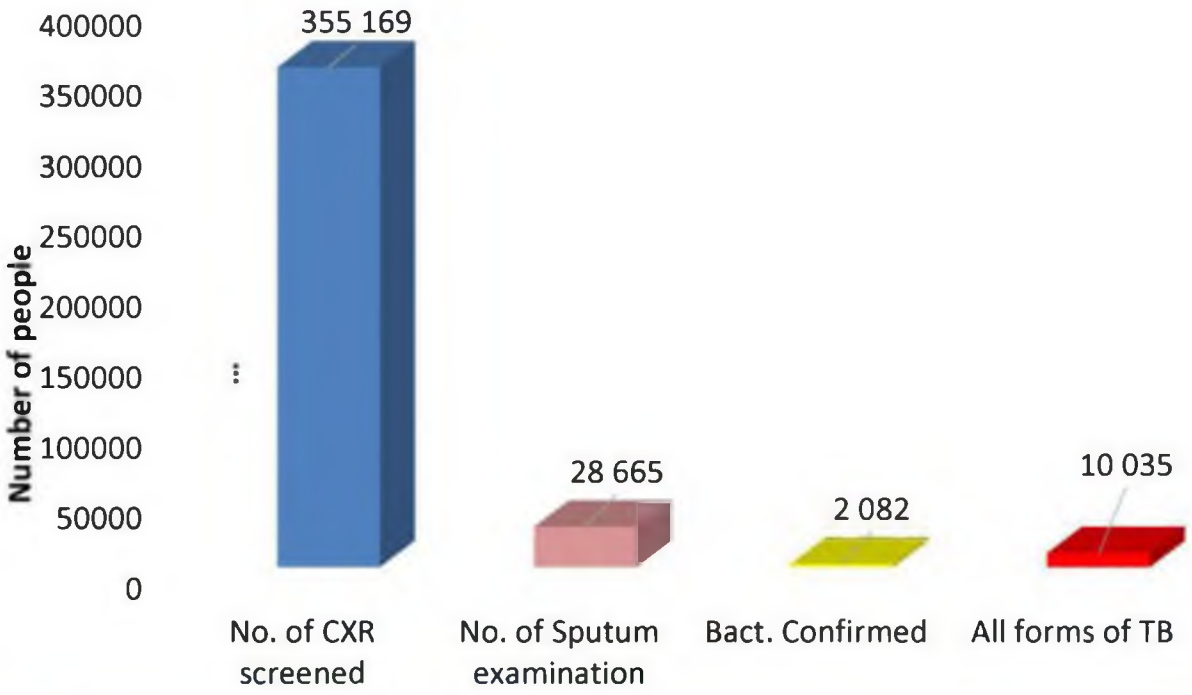
Achievement of ACF and contribution (2019)

ACF Activities	Presumptive TB referral	TB Case Notified	TB Case finding among referral (%)	Contribution to national TB notification
Community-based TB Care	131,826	17,246	13%	12.9%
Mobile Team	355,169	10,035	3%	7.5%
TB Screening among under 5	9,634	1,928	23%	1.4%
Initial Home Visit and Contact Tracing of BHS	18,984	1,034	10%	0.8%
TB Screening at OPD and DM Clinics	1,226	419	27%	0.3%
Sputum Collection Center	10,510	163	2%	0.2%
TB screening at AN & PN care	2,758	50	2%	0.04%
TOTAL	**530,107**	**30 ,875**	**5.8%**	**23%**

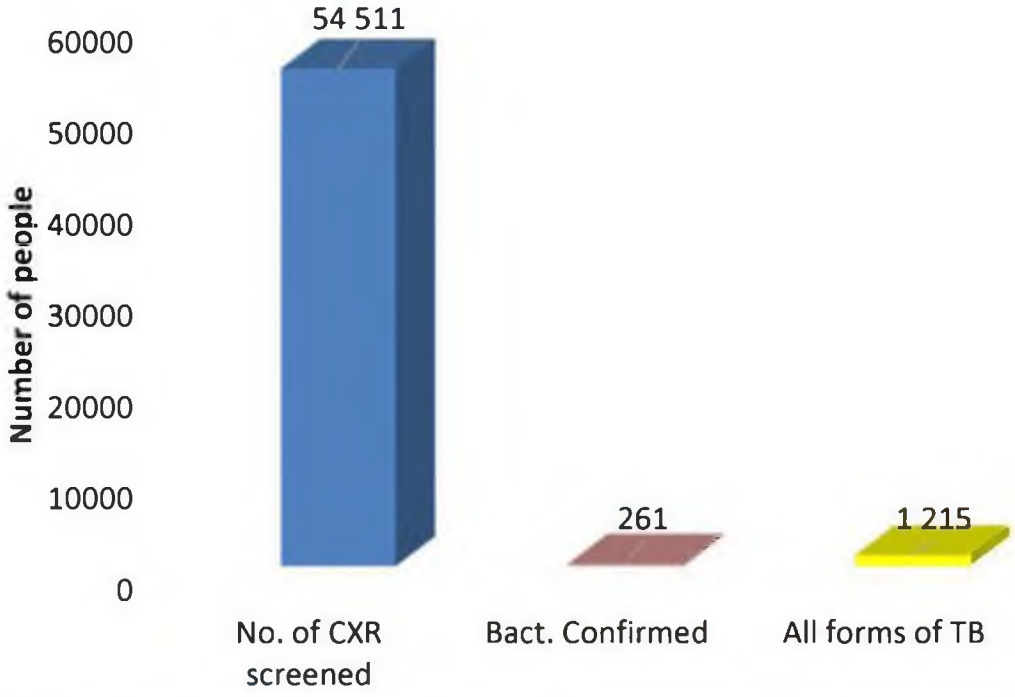
NGOs, INGOs & EHOs (2019)

Local NGOs(11)	International NGOs(22)
Myanmar Women's Affairs Federation	Asia Harm Reduction Network
Myanmar Maternal & Child Welfare Association	International Organization for Migration
Myanmar Medical Association	International Union Against Tuberculosis and Lung Disease
Myanmar Health Assistants Association	Malteser International
Myanmar Red Cross Society	Medical Action Myanmar
Pyi Gyi Khin	Population Services International
Ethnic Health Organizations (EHOs)	World Vision International
Karen Department of Health and Welfare	Health Poverty Action
EHO – Special Region 2	RIT/ JATA (Japan Anti-Tuberculosis Ass.)
EHO – Special Region 4	Community Partners International
Myanmar Anti-TB Association(MATA),SARA	MDM, MSF-H, MSF-CH, SMRU,STC, CHAI,FHI360,Alliance, RI, ARC, MANA, IRC

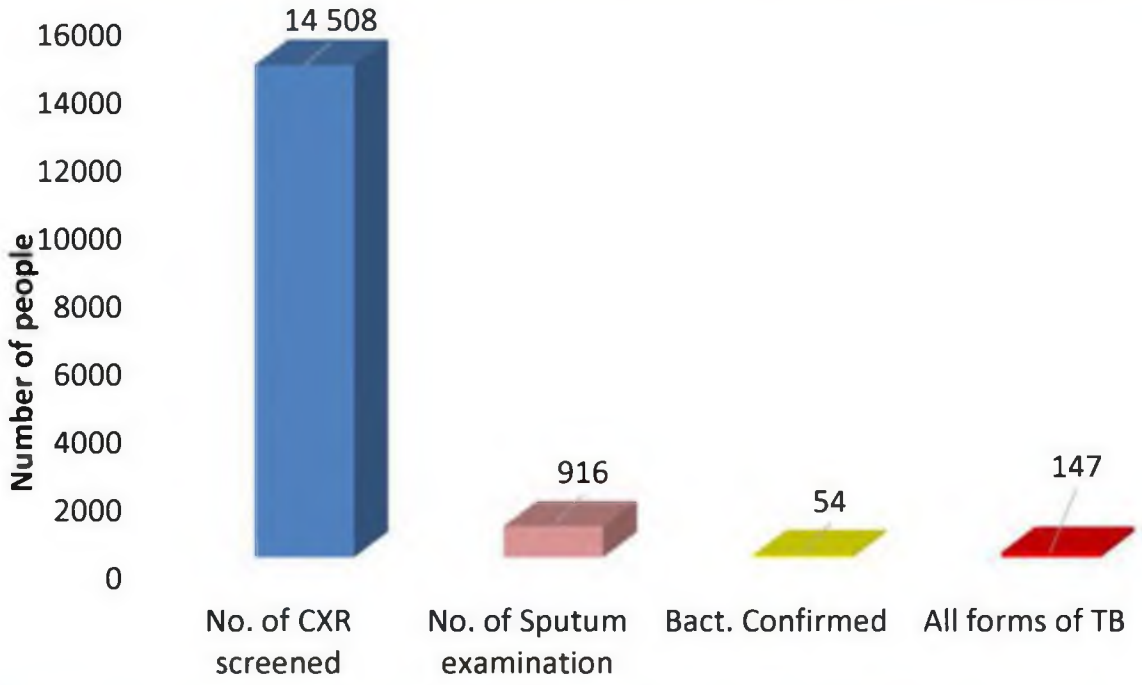
Mobile Team Achievement, 2019



Mobile Team visits to prisons and worksites, 2019



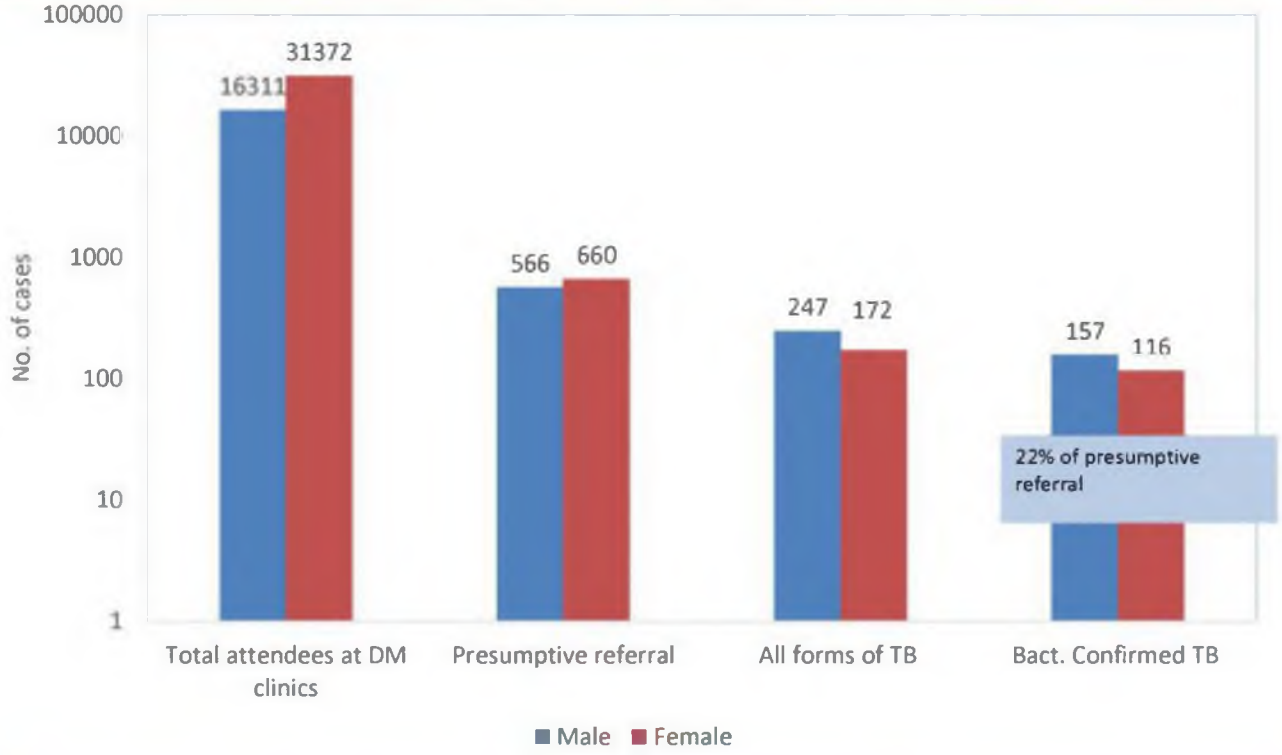
Pre-entry Screening Achievement, 2019



Initial Home Visit and Contact Tracing Activities of BHS (2019)

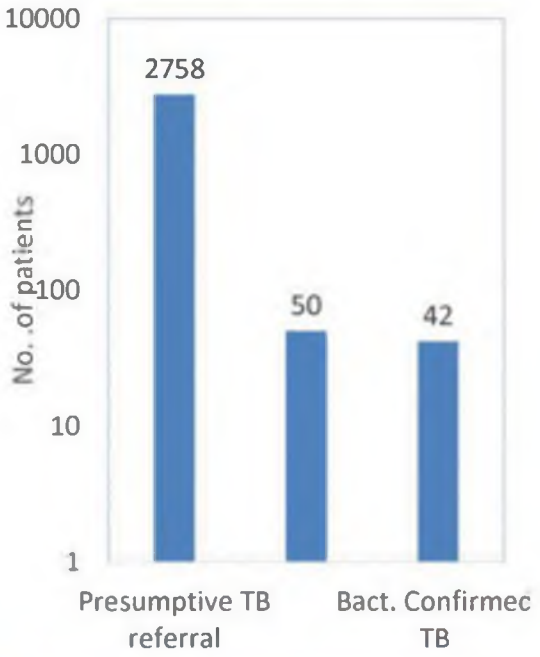
Index Patients receiving CI	Contacts identified	Contacts investigated for TB symptoms	Contacts referred for evaluation	Contacts diagnosed as DS-TB	Contacts diagnosed as DR-TB
51,849	211,867	121,595	18,984	1,019	15
		57% of contacts	16% of contacts	5% among referral	0.1% among referral

TB screening in OPD & DM clinics (107 Townships reported, 2019)

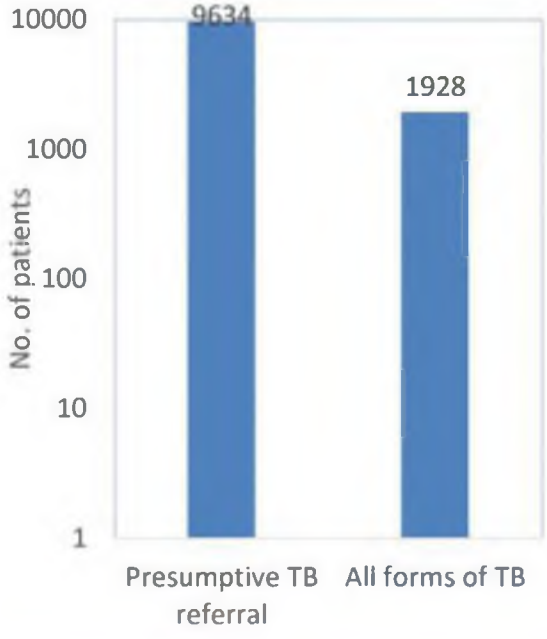


ACF in MNCH services, 2019

AN & PN Care
(Total attendance – 1,654,656)

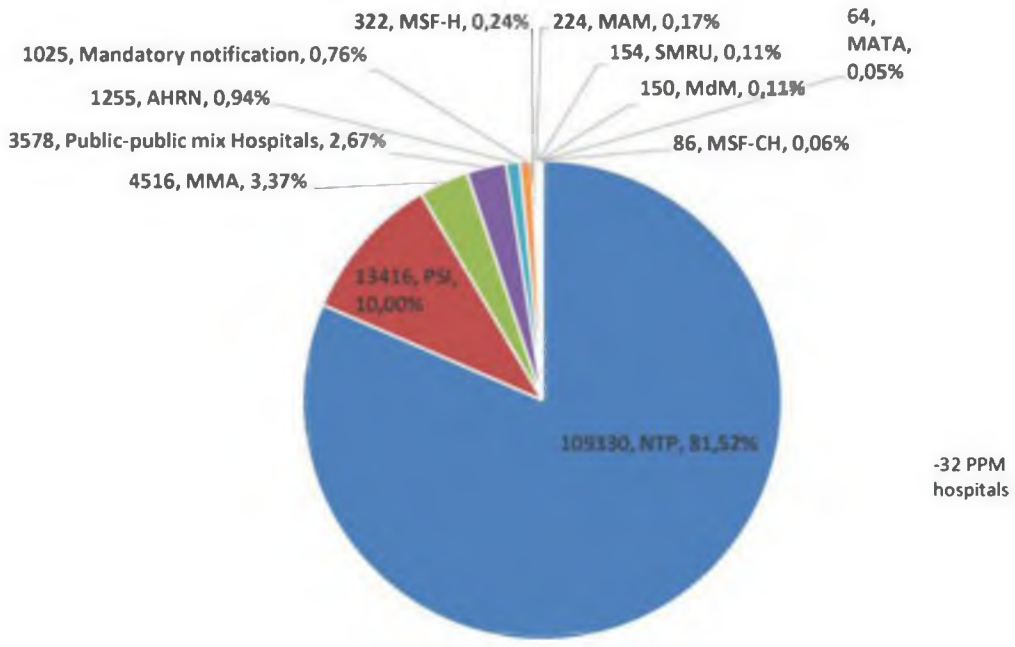


Under 5 Clinics
(Total attendance – 1,399,311)



PPM Activities

Proportion of Total TB cases contributed by NTP & Other Partner units in 2019 (n=134120)



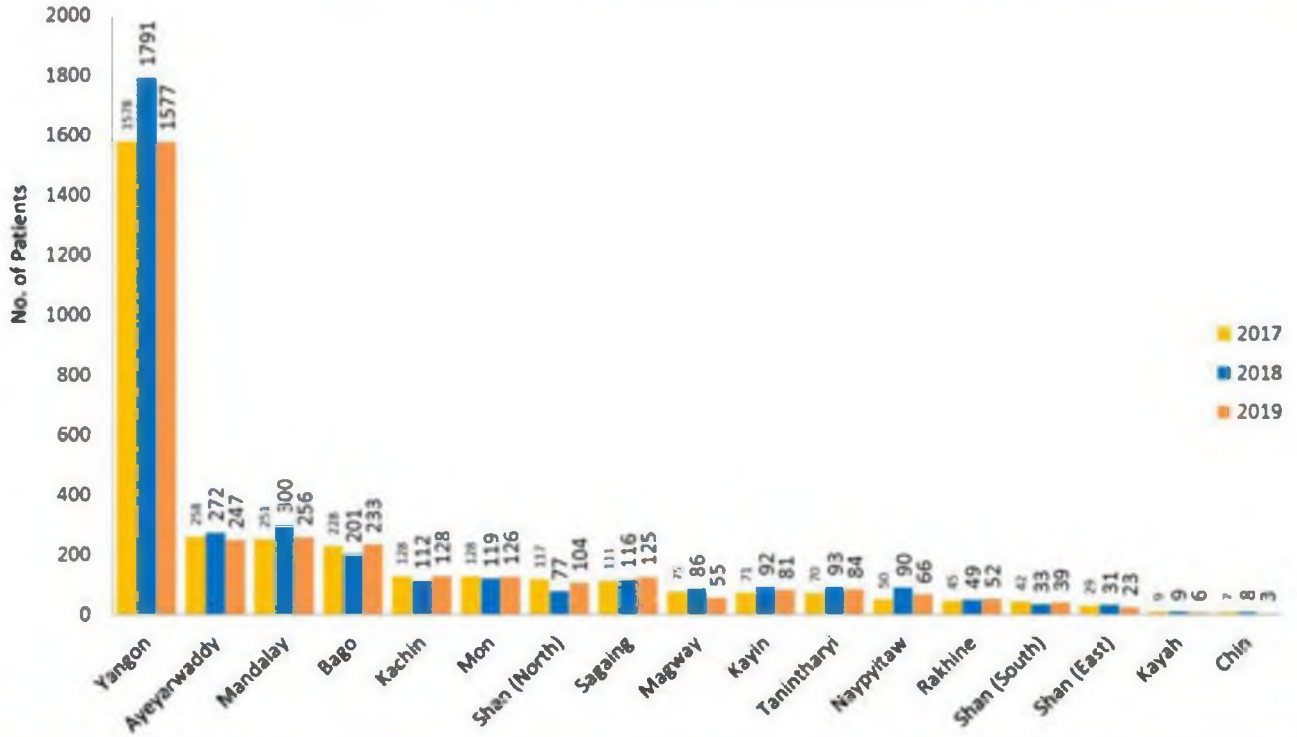
Community based MDR-TB care

Laboratory Service Expansion from Smear to Molecular Technologies

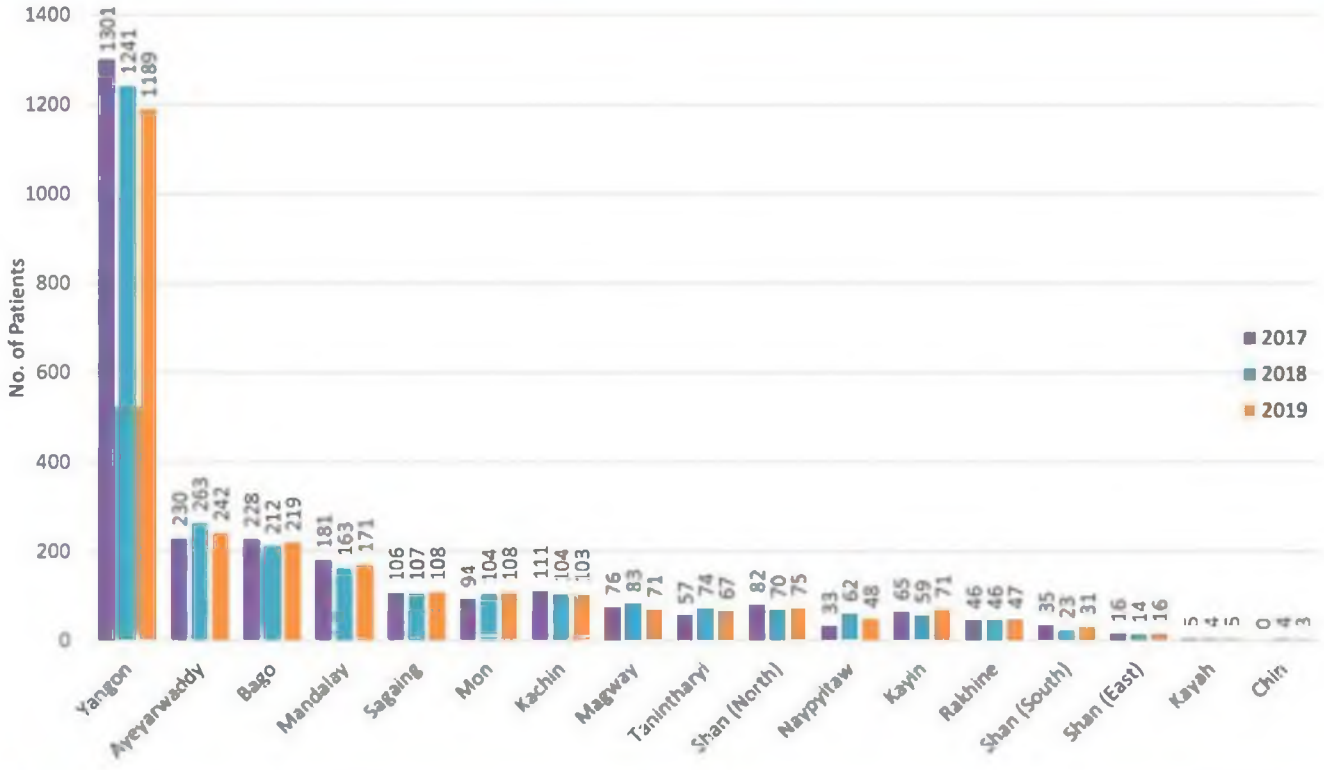
- **Microscopy and X-ray**: all townships & some stations levels
- **Microscopy, X-ray & GeneXpert**: all States/Regions, District levels and some high burden townships

- 540 sputum smear microscopy centers under EQA system
- 114 machines with GeneXpert MTB/RIF upto now (including 10 machines by partners)
- 4 Biosafety Level-3 Laboratories (Yangon, Mandalay, Taunggyi and Mawlamyaing)

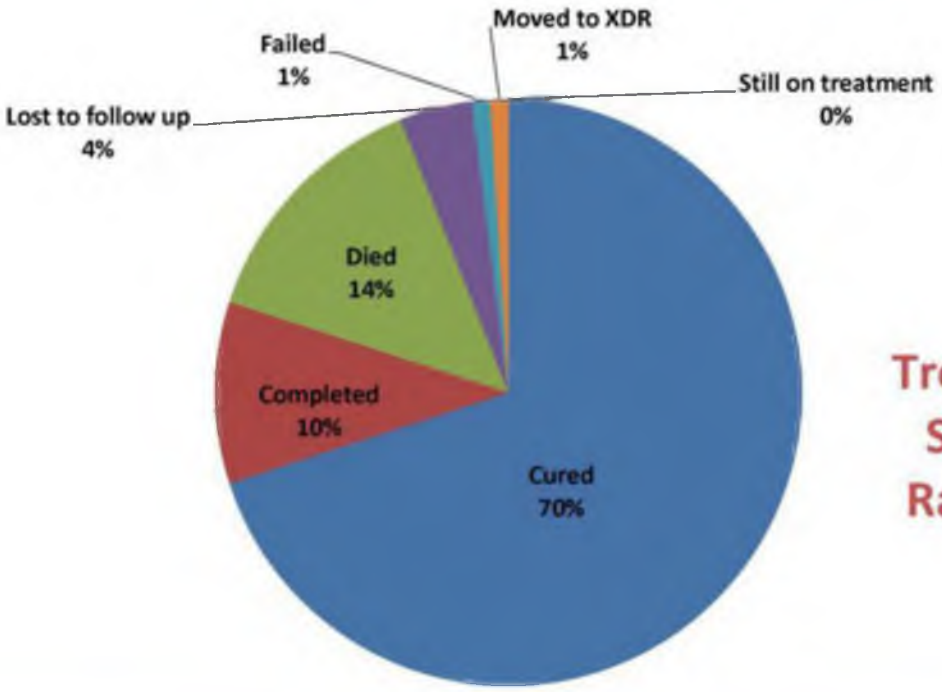
Number of MDR/RR-TB patients notified by Region and State
(2017= 3197 cases, 2018 = 3479 & 2019 = 3205 cases)



Number of MDR/RR-TB patients started treatment (LTR+STR) by Region and State
(2017 = 2666, 2018 = 2,633 & 2019 = 2574)



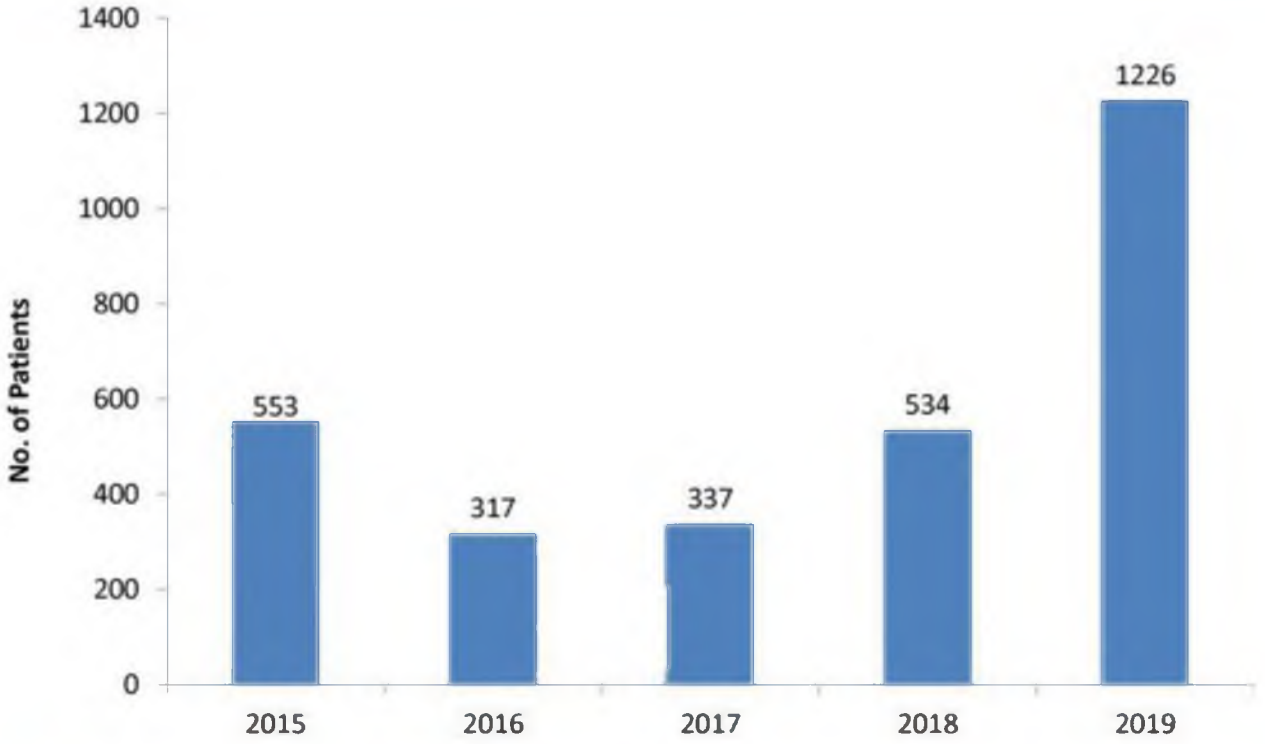
Treatment outcomes of 2017 PMDT cohort (n=2646)



Treatment Success Rate 80%

TB Preventive Treatment

Under 5 TPT (2015-2019)



Challenges faced in TB Control activities

- Limited Human Resource (Doctors, Lab Technicians, etc.)
- Lab Capacity & additional infrastructure/maintenance
- PPM network strengthening especially among private hospitals
- Inadequate sputum transportation from remote and hard-to-reach area to GeneXpert sites & Culture facilities
- Transition from paper based to electronic R & R system
- Sustainable financing
- Universal Health Coverage

Future Plan

- Expand TB diagnosis and treatment services at sub-township level based on the availability of the resources (e.g, HR, microscopy, CXR facilities)
- Enhance case detection and strengthen TB care and prevention by developing State/ Regional Specific Operational Plan
- Enforce MDRTB case notification by maximizing Gene Xpert testing to all eligible patients and reduce the gap between the notified and treated
- Expand PPM partnership especially in private hospitals
- Expand TB laboratory capacity & Infection control measures
- Scale up LTBI treatment in under 5 children
- Implementation researches on prioritized research areas

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THANK YOU